

# **FINAL REPORT**

**TEXT, TABLES AND FIGURES**

## **LETTS DROP FORGE**

**2714 WEST JEFFERSON AVENUE  
DETROIT, WAYNE COUNTY, MICHIGAN  
48216**

**SUBMITTED BY:**

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**MARCH 2001**

US EPA RECORDS CENTER REGION 5



493813

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## EXECUTIVE SUMMARY AND CERTIFICATION

Letts Industries, Inc., and Mr. Martin Letts, its representative, (Respondent) retained ENMANCO, Incorporated (ENMANCO), as its environmental contractor to provide clean up services of a Polychlorinated Biphenyl (PCB) oil spill on a property commonly identified as Letts Drop Forge Plant, located at 2714 West Jefferson Avenue, Detroit, Wayne County, Michigan 48216 ("site").

The site is currently owned by Letts Industries, Inc. The site is an inactive metal forging facility comprised of 1.5 acres geographically located within an industrial area that is within approximately 1/4 mile of the Detroit River.

The United States Environmental Protection Agency (U.S. EPA) is the regulatory authority for this project. Site activities were implemented in accordance with a workplan submitted in October 2000 and approved by the U.S. EPA. The work performed, and reported in this document, addressed the specifications presented in the *U.S. EPA Administrative Order by Consent, Docket No. V-W-00-C-611*.

This report is being submitted to the U.S. EPA On-Scene Coordinator (OSC) within 60 calendar days after completion of all removal actions required under the Order. The report summarizes the actions taken to comply with the Order and conforms to the requirements set forth in Section 300.165 of the NCP, 40 CFR 300.165.

In addition to a description of the work performed pursuant to the Order, this document includes: a good faith estimate of total costs incurred by Letts Industries in complying with the Order; a listing of quantities and types of materials removed off-site or handled on-site; a discussion of removal and disposal options considered for those materials; a listing of the ultimate destinations of those materials; a presentation of the analytical results of all sampling and analyses performed; and accompanying appendices containing all relevant documentation generated during the removal action.

The systematic approach used to clean up the spill was performed in accordance with the criteria established in 40 CFR 761, subpart G for a high concentration PCB spill.

The adequacy of the cleanup of this spill is in accordance with U.S. EPA criteria as defined in 40 CFR 761.120, Subpart G.

The Health and Safety Plan (HASP) in this document ensured the protection of the public health and safety during performance of on-site work under the Consent Order.

All sampling and analyses performed pursuant to the Consent Order conformed to U.S. EPA direction, approval, and guidance regarding sampling, quality assurance/quality control ("QA/QC"), data validation, and chain of custody procedures. The laboratories that were used to perform the analyses for this work participate in a QA/QC program that complies with U.S. EPA guidance.

The subject property is located at 42° 19' 3.4" north latitude and 83° 4' 31.1" west longitude with a common street address of 2714 West Jefferson Avenue, Detroit, Wayne County, Michigan. The site is comprised of approximately 1.5 acres of industrial zoned land that is occupied primarily by two brick buildings and an inner courtyard with a truck loading area and gated entry facing south toward West Jefferson Avenue.

The City of Detroit Water and Sewerage Department's (DWSD) storm sewer system services the subject site. Soils in the vicinity of the subject property are classified as Pewamo-Blount-Metamora association. The subsurface geology in the vicinity of the subject property appears to be clay.

Operations on the site date back to 1909 when steel shearing and forging operations were established that first utilized oil furnaces and later switched to gas fired furnaces. Steel shearing and forging were the prime operations on the site from 1909 up until 1996, where upon the facility ceased operation. During the period of operation, lubricating and hydraulic oils were utilized and commonly stored in 55-gallon drums.

High electrical energy equipment was utilized on the site, which demanded the presence of high voltage transformers and electrical switches. Oils, containing polychlorinated biphenyls (PCBs), served as the prime dielectric fluids used in the transformers and capacitors that occupied the premises.

In 1996, when operations ceased, the facility was vacated pending ongoing efforts to market the facility. During this time, some of the capacitors were removed from the premises. However, six large transformers and a few capacitors, all of which contained dielectric fluids, remained on the site.

On March 30, 2000, U.S. EPA inspectors were checking area properties with a potential for illegal dumping in the vicinity of the Letts facility to alert property owners of illegal dumping.

The U.S. EPA inspectors reported that the Letts facility appeared to have been vandalized. They observed that four of the six transformers had been toppled over and their contents spilled in the courtyard. They concluded that the contamination might have been carried by storm water onto the sidewalk and into the catch basin immediately in front of the facility on West Jefferson Avenue. The U.S. EPA notified the property owner (Letts Industries, Inc) on March 31, 2000, who in turn, contracted ENMANCO.

Observations made on March 31, 2000 were as follows:

- A catch basin on West Jefferson Avenue appeared to be impacted with oil.
- The truck well was filled with water and a sheen was observed on the water.
- Oil stains were observed across the concrete of the steel yard and truck well areas.
- Four (4) transformer carcasses were observed to be lying prone on the ground in the steel yard area.
- Two (2) transformers were positioned on the main power pad in the steel yard area.
- Several 55-gallon drums and 5-gallon pails were sited in various areas on the site.

- Fracture cracks were evident in the concrete of the steel yard and also under the east wing of the hammer shop in Building 2 (Please refer to Figure #2).
- Two ASTs were observed on in the northwest section of the property.

Based on visible observations across the entire site, twelve (12) areas were observed to have visible staining. For purposes of identification, these twelve areas were assigned a discrete number, as well as the areas where staining and various containers were sited. Two areas, namely the steel yard vicinity and the DWSD catch basin #1 were determined to be directly impacted by the PCB-containing oil spill from the high voltage transformers.

The Respondent retained a 24-hour security guard service to secure the site from any further unauthorized access. To protect the public from any potential encounter with the spilled PCB oil, the Respondent also retained a fencing contractor, to repair any breaches in the fence.

Samples were collected from the truck well and from miscellaneous debris and soil in the vicinity. Samples were maintained under chain of custody procedures and transported in an ice-cooled sample container, to a qualified laboratory.

Fifty Eight Hundred (5800) gallons of waste water were evacuated from the truck well in the steel yard area. ENMANCO bermed the entire south property line with adsorbent. ENMANCO shoveled, scraped, and swept all loose debris and materials and placed them into a roll-off box. ENMANCO covered all transformers with 6-mil thickness plastic to eliminate any further contamination which could result from rainfall. ENMANCO decontaminated personnel, removed protective equipment and left all materials on site for future proper disposal.

On April 3, 2000, ENMANCO returned to the subject property at 8 AM. A 2500 gallon capacity holding tank was staged on the side walk between the vac trailer and the facility along West Jefferson. ENMANCO established a temporary support zone in the south section of the die room. An additional 500 gallons of material were pumped from the truck well and placed into the trailer. ENMANCO scraped all sludge and debris out of the truck well and placed the scrapings into the roll-off box.

ENMANCO solidified semi-sludge materials, located in the bottom of the truck well, with an absorbent material. ENMANCO washed the truck well, immediately adjacent concrete, sidewalk, and street with an alkaline detergent solution and rinsed copiously with water, which was properly contained and stored in the vac trailer for future disposal.

ENMANCO collected four (4) samples from composite debris and sludge from the steel yard area, floor scrapings from the hammer room floor, oily water sample from the pit in the hammer shop, and a water sample from the 2500 gallon capacity staged holding tank, which contained vacuumed water from catch basins and the truck well, as well as washings.

On 4/7/2000, ENMANCO positioned a 20,000 gallon capacity holding tank (frac-tank) along West Jefferson on the sidewalk next to the 2500 gallon capacity tank and near the Vac tanker sitting on the street. West Jefferson Avenue was cordoned off for a distance of 232 ft beginning at the corner of St Anne Street and West Jefferson Avenue and extending east to west along the front of the facility to approximately 100 ft east of 21<sup>st</sup> Street.

Brighton Analytical Laboratory (**Appendix 3**), located at 2105 Pless Drive in Brighton, Michigan analyzed all six (6) collected samples for PCBs. U.S. EPA collected eight (8) samples of various media on 3/31/2000. U.S. EPA's samples were collected from each of the three transformers and submitted to CT&E Environmental Services, Inc for chemical analysis. The data obtained confirmed the presence of arochlors 1254 and 1260.

Although containers, floor stains, and pits located throughout the facility were not a result of the spill that occurred, the Consent Order specified that these issues be addressed.

Prior to commencing clean up procedures, a support zone was established. The PCB transformers and carcasses, the capacitors, and the switch gear were contained, removed, and properly disposed in accordance with subcontractors (Dynex/TCI) work plan submitted to EPA on Friday, 4/7/2000 along with ENMANCO's work plan to complete stabilization of the site. A certificate of disposal was issued from TCI. After TCI transported all of the removed equipment, it was processed via Total Transformer Reclamation Method.

Based on the analytical results obtained on samples collected by ENMANCO and U.S. EPA, arochlors 1260 and 1254 of the PCB family (CAS1336-36-3), appeared to be the primary constituents of concern. ENMANCO concluded the best decontamination

procedure to be the removal of the impacted concrete surface of the steel yard.

The procedure for the removal of the concrete consisted of a concrete busting venture followed by loading concrete pieces of under 1000 pounds per load into a truck for transportation and disposal into an EPA approved landfill. All concrete was placed into roll-offs that were lined with 6-mil plastic. The PCB impacted concrete, removed as a solid, was transported, upon EPA's approval, to EQ in Belleville, Michigan and disposed into a PCB cell in EQ's chemical waste landfill, where records are required to be maintained for at least 20 years after the landfill is no longer used for disposal of PCBs.

Dust control procedures and protection of personnel were addressed in the Health and Safety Plan (HASP). Real time particulate dust monitors were used to measure airborne particulate concentration during removal of the concrete in the spill area. Approximately 288,017 tons of PCB impacted concrete were removed from the Site and properly disposed in EQ's EPA approved landfill.

Based on the analytical results obtained, 13 ug/L (0.013 mg/L), arochlor 1260 was detected in an oily water sample collected, by ENMANCO, in the truck well. A nonaqueous liquid sample collected from the catch basin by the START contractor was reported as non-detect for PCB. Soil near the sewer, collected by the START contractor, was reported to contain a PCB concentration level of 23 ppm arochlor 1254 and 17 ppm of arochlor 1260.

DWSD submitted to U.S. EPA, a letter that specified a scope of work for cleanout of the DWSD's sewer system surrounding the Letts facility. Subsequent to that written scope of work, DWSD submitted a Change Order (5/15/2000) and stated that the washings of their sewer system should be restrained to the catch basins and manholes immediately surrounding the Letts facility.

A criteria was established such that if the results indicated PCB concentrations of  $<10\mu\text{g}/100\text{cm}^2$ , the sewer system would be considered to be within DWSD's acceptable criteria. If levels were found to exceed the DWSD's criteria, the power wash process would be repeated until samples were obtained with concentrations within acceptable criteria limits. It was not necessary to implement this contingency plan.

Areas 3, 4, 6, 8, 9, 10, 11, and 12 contained drums, pails, pits, two ASTs, and floor stains on the site. This section also addresses a small portion of sidewalk on West Jefferson that was directly impacted by the spill and is included in Figure #2 in Area #1.

Medical waste (sharps) were loaded into a sharps container and staged on the west side of the property to await pick up, transport and disposal by Stericycle (formerly BFI Medical Waste). In each area where containers/drums/pails were identified, the containers were staged, and then sampled for disposal purposes. Prior to any sampling of containers, each container was inspected for a label to attempt to identify the contents of the container. Drum sampling was performed in accordance with ASTM Standard Practice 6063. An inventory was prepared to identify the original location of each drum/pail and the area in which each was staged.

The open pits, containing liquid materials, were also sampled. Using a backhoe, debris was removed from the indoor hammer pit and placed on a large plastic tarp next to the pit. A grab sample was taken of the sand in the pit. In the areas where floor staining was observed, grab samples were randomly collected from each stained area. The two ASTs on the subject property were sampled for determination of waste disposal.

In accord with U.S. EPA's request to sample the public sidewalk adjacent and immediately south of the subject property on West Jefferson Avenue, approximately 24 wipe samples were collected along the public sidewalk and street on West Jefferson Avenue.

Based on the analytical data obtained, all containers were found to contain non-haz materials, with the exception of Drum 3, Drum 38, and Pail 35. All containers, with the exception of the three identified above, were vacuumed out and the contents transported to and disposed at Rich Coast. The empty drums were either recycled or destroyed, as a function of condition. Because total organic halides exceeded the regulatory limit of 1000 ppm in Drum #3, a solvent scan was performed to further determine its proper disposal. However, the solvent scan indicated no PCBs present and therefore Drum #3 was disposed under manifest as non-hazardous waste.

The sample for Pail #35 was reported by the laboratory to have a TCLP barium concentration of 499 mg/L, which exceeded the regulatory limit of 100 mg/L for barium.



Therefore, a profile was prepared and the material in Pail #35 was disposed of as a hazardous substance. Sampling of Drum 38 resulted in the removal of all material present in Drum 38, so there was nothing left to dispose.

The results of the floor scrapings beneath the containers in the former Hammer Shop area and in sections of the former Shear Room area indicated the presence of arochlor's 1268, 1260, 1254, and 1248. The remedy selected to address these areas was to scarify the floors of the former Hammer Room and Shear Room with subsequent loading of the scrapings into a roll-off box for subsequent proper disposal at EQ under manifest.

Sidewalk wipe samples did exceed 10ug/100cm<sup>2</sup> for four samples. As a result, an approximately 25 to 50 sq ft section of the cement sidewalk was removed and placed into a roll-off box for subsequent disposal at EQ under manifest. The 25ft<sup>2</sup> to 50 ft<sup>2</sup> section of sidewalk concrete was replaced.

At the inception of this project, rain and precipitation across the PCB impacted ground surface on the facility resulted in the accrual of potentially contaminated runoff water. ENMANCO placed 6-mil plastic across the exclusion zone of the Letts Drop Forge facility and extended the plastic over a 3 ft to 4 ft border. The plastic was anchored with bricks and absorbent materials. The PVC line (from the roof drains) that feeds into the truck ~~was~~ <sup>was</sup> plugged with approved plug. The truck's waste stream is off with ~~plugs~~ <sup>plugs</sup> of the stated large volume of treated water, PCB free water was ~~rotated~~ <sup>rotated</sup> down the side ~~with~~ <sup>with</sup> discharging the treated water into the DWSD system under special permit provided by DWSD. A filtration separation system that removed PCBs and resulted in PCB concentrations that did not exceed 1 ppb in the aggregate and <0.5 ppb Arochlor 1260, was implemented.

ENMANCO obtained, on behalf of the Respondent, a "*Special Discharge Permit*" from DWSD. Bis (2ethylhexyl) phthalate and arochlor 1260 were detected in some of the containers and storage areas. (It is believed that the bis phthalate resulted from leaching in the plastic holding vessels which is not uncommon.) At the request of DWSD, all water on site was treated. In order to determine the effectiveness of the water treatment system, a prepared control standard of known concentrations of PCBs (arochlors 1254 and 1260) and bis (2ethylhexyl) phthalate, was prepared. Two 6,000 gallon capacity tankers (identified as 32T and 21T) were positioned in close proximity to the treatment trailer to be used as holding vessels prior to discharge.

As water was treated, it was collected in one of the holding vessels (6000 gallon tanker; or the two 3000 (FH and BH) compartmentalized, gallon tanker) until the vessel was full. Once a vessel reached full status, collection in that vessel was ceased and resumed in another holding vessel. A representative grab sample from a full holding vessel was then taken, under chain of custody, to Quantum Laboratories for analysis of PCBs and bis (2ethylhexyl) phthalate to be quickly analyzed.

The treated water was held until the laboratory provided the monitoring results for each grab sample. Upon announcement from the laboratory that the samples were non-detect for the contaminants of concern, discharge would then commence.

DWSD specified the discharge parameters in the permit as follows: A daily maximum discharge of 7200 gallons per day; at a not-to-exceed flow rate of 60 gallons per minute, over a 24 hours a day, seven days a week basis. These parameters were allowed, given the severe freezing weather conditions that prevailed. The total not to exceed discharge volume was defined as 50,000 gallons. The treated water was discharged into a catch basin located approximately 10 ft east of a utility pole and 14 ft south of the south wall of the building (former shipping office) of the Letts Drop Forge Facility on West Jefferson Avenue in Detroit. There was no overflow at any time during the discharge procedure. Prior to commencing discharge, a call was placed to DWSD in accordance with the requirements of the Special Discharge Authorization.

The objective of the verification sampling and analysis was to confirm compliance with the cleanup specifications in 40 CFR 761.130. Surfaces throughout the spill area, prior to the implementation of the decontamination procedure were all primarily concrete. Subsequent to the decontamination procedure, the area beneath the removed concrete, was soil. A statistical random and biased blended sampling strategy of the soils was used to verify the cleanup.

Soil samples were collected in accordance with ASTM Standard Practice D5633. The collected samples were placed into a cooler, and shipped to Quantum Laboratories, under chain of custody, for determination of PCB concentration. Although the target criteria for cleanup of soils provided in 40 CFR 761.130 is listed as 25 ppm, the target soil criteria for cleanup utilized by the Respondent is 20 ppm, which is the Michigan Department of Environmental Quality's (MDEQ) generic industrial site standard for PCBs. No reported value exceeded the criteria of 20 ppm. Therefore, no further remediation is required at this time on Area #1, which verifies successful completion of cleanup procedures for Area #1.

Subsequent to cleaning the sewer system as described above, ENMANCO visually inspected the sewer lines and collected samples from each catch basin and sump and submitted the collected samples to Quantum Laboratories for analysis. Sampling was performed in accordance with DWSD's request. The fact that no concentration of PCB, above the detection limit, was found verifies the successful cleaning of the DWSD's sewer system. ENMANCO provided split samples with DWSD and no PCBs were detected in any samples.

Upon completion of scarification of floor areas within the facility where PCBs were detected, wipe samples were collected and submitted for analysis. No PCBs were detected in any of the collected samples. This data confirms the completion of clean up for areas under drums and pails, as well as areas of staining.

The contents of pits in the hammer room that were filled in with debris at the time of the closing of the facility in 1996, were determined to be innocuous. The floor sample taken from the bottom of the excavation revealed no PCB presence. Therefore, it may be concluded that none of the debris filled hammer pits is contaminated with PCBs.

The removal of the concrete sidewalk on the south side of the facility, along with the replacement of the concrete confirms the completion of clean up of that area.

Given the cold temperatures existing at the time of year that this project was completed, it was decided that the Respondent would be better served if the truckwell area were filled in with sand and gravel capped as opposed to concrete capped. Filing in of the truckwell minimizes the potential of water recharge in this area.

Although the liquid in the pits located in the hammer room and the shear room did not contain PCBs or hazardous materials, the pits were vacuumed and back filled with sand and graded to minimize potential water recharge.

The removal and proper disposal of the medical waste by Stericycle (formerly BFI Medical Waste Disposal) confirms the completion of clean up of the medical waste.

The holding vessels and all equipment removed from the site were first decontaminated and the washings were treated via the water treatment system. The two 20,000 gallon frac tanks were decontaminated and the wash water was treated through the GAC water treatment system. The frac tanks were removed from the site.

The 6000 gallon vac tanker, originally used to store contaminated water was decontaminated and the wash water was treated through the GAC treatment system. The 2500 gallon holding tank was decontaminated and the wash water was treated through the GAC water treatment system. A total volume of 44,420 gallons of water were treated and discharged.

The standby generator was removed from the site on 12/26/2000. Barricades and caution tape were removed and bagged for general refuse disposal and West Jefferson Street was opened to the public.

PPE waste, contaminated tools, piping, GAC filter system drums, bag filters, plastic tarping, shovels, sampling spatulas, Coliwassa tubes and other expendable paraphernalia used on site was placed into a roll off box containing the sidewalk concrete and transported to EQ landfill for disposal in a PCB cell on 1/2/2001. On 1/4/2001, ENMANCO's decon and utility trailer, located in the safe zone, were removed from the site. All activities were completed on the site on January 18<sup>th</sup>, 2001.

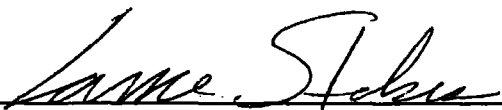
The security service and portajohn service remained on site 24-hours per day, seven days per week until February 28, 2001.

A good faith estimate of total costs incurred by Letts Industries in complying with the Consent Order is \$ 700,000. A spreadsheet detailing these costs is presented in **Appendix 20**. [It is noted that until notice of project completion is received from EPA, some of these costs will continue.]

A listing of quantities and types of materials removed off-site or handled on-site is provided in **Appendices 4, 7, 18 & 19**. A listing of the ultimate destinations of those materials may be found in **Appendix 21**.

## **CERTIFICATION**

I certify that, to the best of my knowledge. After appropriate inquiries of all relevant persons involved in the preparation of this report, the information submitted is true, accurate, and complete.

A handwritten signature in dark ink, appearing to read "Lance Stokes", is written over a horizontal line.

LANCE STOKES, PhD  
Project Coordinator

Date 3-5-2001



## 1.0

## INTRODUCTION

Letts Industries, Inc., and Mr. Martin Letts, its representative, (Respondent) retained ENMANCO, Incorporated (ENMANCO), as its environmental contractor to provide clean up services of a Polychlorinated Biphenyl (PCB) oil spill on a property commonly identified as Letts Drop Forge Plant, located at 2714 West Jefferson Avenue, Detroit, Wayne County, Michigan 48216 ("site").

The site is currently owned by Letts Industries, Inc. The site is an inactive metal forging facility comprised of 1.5 acres geographically located within an industrial area that is within approximately 1/4 mile of the Detroit River. A vicinity map of the subject property is provided in **Figure #1**. On behalf of its Respondent, Letts Industries, ENMANCO is pleased to submit the enclosed final report.

The United States Environmental Protection Agency (U.S. EPA) is the regulatory authority for this project. Site activities were implemented in accordance with the workplan submitted in October 2000 and approved by the U.S. EPA. The work performed and reported in this document, addressed the specifications presented in the *U.S. EPA Administrative Order by Consent*, Docket No. V-W-00-C-611 [**Appendix 1**], described as follows:

- Developed and implemented a Site-specific Health and Safety Plan (HASP);
- Established and maintained Site security;
- Removed and disposed of two PCB transformers and four transformer carcasses and related materials.
- Demolished and removed PCB impacted concrete and disposed at an EPA approved off site facility in accordance with U.S. EPA Off Site Rule (40 CFR para. 300.440);
- Conducted verification sampling of underlying soils to confirm remediation of PCB;
- Cleaned potentially impacted catch basins and manholes within Detroit Water and Sewer Department's (DWSD) sewer system surrounding Site in accordance with DWSD's specifications.
- Sampled all manholes and catch basins surrounding site to determine if PCB impact occurred and if additional sewer cleaning was required;
- Confirmed successful completion of sewer system cleaning via verification sampling;
- Treated contaminated runoff water for disposal (via permit) into DWSD's sewer system;
- Conducted sampling and analytical analysis to identify, inventory, and characterize potentially hazardous substances, pollutants or contaminants on Site for subsequent waste disposal;
- Contained potentially hazardous substances in drums, pails, tanks, or pits found on Site and safely, with proper approvals, properly disposed;
- Stabilized and disposed of off-site potentially hazardous substances, pollutants, or contaminants from drums, pails, tanks, and pits at approved disposal facilities in accordance with the U.S. EPA Off-Site Rule (40 CFR para. 300.440);
- Characterized, excavated and transported contaminated soil off-site to a U.S. EPA-approved disposal facility; and
- Demolished and removed impacted concrete sidewalk on south side of Site and properly disposed at EPA approved landfill.

This report was submitted to the U.S. EPA OSC within 60 calendar days after completion of all removal actions required under the Order. The report summarizes the actions taken to comply with the Order and conforms to the requirements set forth in Section 300.165 of the NCP, 40 CFR para 300.165.

Included also is a good faith estimate of total costs incurred by Letts Industries in complying with the Order; a listing of quantities and types of materials removed off-site or handled on-site; a discussion of removal and disposal options considered for those materials; a listing of the ultimate destinations of those materials; a presentation of the analytical results of all sampling and analyses performed; and accompanying appendices containing all relevant documentation generated during the removal action.

The systematic approach used to clean up the spill which resulted from the release of transformer dielectric materials containing Polychlorinated Biphenyls (PCB) concentrations of 500 ppm or greater, is delineated. The cleanup was performed in accordance with the criteria established in 40 CFR 761, subpart G for a high concentration PCB spill. Method of cleanup, verification sampling, handling of materials, disposal, and health and safety procedures implemented during the activities are presented.

The report describes proper procedures used [1] to identify, inventory, and characterize hazardous substances that were on site; [2] to stabilize and dispose off-site, all found hazardous substances from drums, pails, tanks, and pits, at approved disposal facilities in accord with 40 CFR para 300.440; and [3] to characterize, excavate, and transport off-site, all contaminated soil that exceeded acceptable soil clean up levels.

Because the site had a restricted access low occupancy area classification under TSCA regulations, the applicable cleanup standard under TSCA was specified as 25ppm PCB. [See 40 CFR Sec. 761.125©(3)(v) and 761.61 (a)(4)(i)(B)]. However, the Respondent selected to meet the more stringent State of Michigan generic cleanup criteria for an industrial site, which is 20 ppm PCB. [Ref: Michigan Department of Environmental Quality, Environmental Response Division, Operational Memorandum #18, Part 201 Generic Cleanup Criteria Tables, Revision 1, footnote T].

The adequacy of the cleanup of this spill is in accordance with U.S. EPA criteria as defined in 40 CFR 761.120, Subpart G.

The Health and Safety Plan (HASP) presented in **Appendix 2** in this document ensured the protection of the public health and safety during performance of on-site work under the Consent Order (**Appendix 1**). The HASP complied with applicable Occupational Safety and Health Administration ("OSHA") regulations found at 29 CFR Part 1910.

All sampling and analyses performed pursuant to the Consent Order conformed to U.S. EPA direction, approval, and guidance regarding sampling, quality assurance/quality control ("QA/QC"), data validation, and chain of custody procedures.

The laboratory that was used to perform the analyses for this work participates in a QA/QC program that complies with U.S. EPA guidance.

Assumptions for the clean up of this site were as follows:

- The assumed concentration of PCBs spilled was determined by the PCB concentration in the standing transformers found on the site rather than a measurement of the actual concentration of PCBs on the spill area.
- Spill area is defined as the "area of surface on which visible traces of the spill could be observed plus a buffer zone of one (1) foot beyond the visible traces". [40CFR 761.123:Definition of "spill area" Page 86].
- Subject property is classified/zoned as an industrial area.
- Industrial surfaces include ceilings, walls, floors, roofs, roadways, driveways, sidewalks, concrete pads beneath electrical equipment, curbing, exterior structural building components, indoor vaults and pipes in an industrial area are considered as low contact areas. [40CFR 761.123 Definitions Page 84].
- The acceptable level of cleanup of PCB in soil at the subject site was <25 ppm, [40 CFR 761.125, page 89]. The site is an industrial property with restricted access. The steelyard where the spill occurred is located at least 0.1 km from a residential/commercial area and is limited by man-made barriers. [40CFR 761/123 Definitions, page 85].
- The acceptable level of cleanup of PCBs on low contact outdoor surfaces is <10 ug/100cm<sup>2</sup> [40CFR 761.130 page 90].
- The work performed was designed to address identified areas of potential impact. The areas identified and demarcated in the site plan (Figure #2) present stained areas where drums, pails, tanks, and pits were found as well as the identification of the PCB spill contaminated areas. However, no conclusions or extrapolations were made or implied about potential impacts outside the areas identified as the specific spill areas that were cleaned up and verified based on the results of the verification sampling described herein.
- Post cleanup sampling complied with the requirements specified in 40CFR 761.130

This document provides the site description and background, incident discovery, spill assessment, other areas assessed, actions taken to stabilize the site impacted by the PCB spill, clean up procedures for the spill impacted areas and other areas of contamination, verification sampling specifications and techniques, analytical procedures and results for chemical analysis of collected samples, health and safety plan implemented during the accomplishment of the spill clean up work, securing the site to prevent public access to hazardous substances, and handling and disposal of all generated or accrued contaminated wastes.

## 2.0

## SITE DESCRIPTION

The subject property is located at 42° 19' 3.4" north latitude and 83° 4' 31.1" west longitude with a common street address of 2714 West Jefferson Avenue, Detroit, Wayne County, Michigan. The site is comprised of approximately 1.5 acres of industrial zoned land that is occupied primarily by two brick buildings and an inner courtyard with a truck loading area and gated entry facing south toward West Jefferson Avenue. (**Figure #2**).

A small electrical building is located in the north central section of the site and a concrete electrical transformer pad is located directly south of the electrical building. All surfaces on the subject property are concrete or paved with the exception of a grassy area in the northwest section of the property. The property is fenced around its entire perimeter.

The property fronts along West Jefferson Avenue and is bounded on its east side by St Anne Street; an alleyway borders the property's northern perimeter and a vacant parking area borders the subject property's western property line. The Detroit River lies approximately 0.2 mile south of the subject property.

The City of Detroit Water and Sewerage Department's (DWSD) storm sewer system services the subject site. (**Figure #3**). Three manholes are located along the alley way and flow, as reported by DWSD, is assumed to traverse west to east. One manhole is located in the intersection of St Anne Street and West Jefferson Avenue and flow is south to north.

Two catch basins are located along West Jefferson Avenue: one is located in the vicinity of the corner of St Anne and West Jefferson Avenue; the other is located approximate 75 feet west along West Jefferson Avenue and just outside the facility's former steelyard. Representatives from DWSD, stated that to the best of their knowledge, conduits extend from the catch basins to the manholes in the alley way and thus traverse the subject property south to north.

Soils in the vicinity of the subject property are classified as Pewamo-Blount-Metamora association **[REF: USDA Soil Survey of Wayne County Michigan]** and are characterized as poorly drained soils that have a fine texture to moderately coarse subsoil. These soils are typically formed on glacial till.

The subsurface geology in the vicinity of the subject property appears to be clay. Below this clay layer is a discontinuous sand, gravel, and boulder layer that directly overlies bedrock and represents a high energy depositional environment.

**[REF: Environmental Geology of Metropolitan Detroit by Daniel T. Rogers, March 1996]**



### **3.0 SITE BACKGROUND**

Activities on the site date back to 1909 when steel shearing and forging operations were established that first utilized oil furnaces and later switched to gas fired furnaces. Steel shearing and forging were the prime operations on the site from 1909 up until 1996, where upon the facility ceased operation. During the period of operation, lubricating and hydraulic oils were utilized and commonly stored in 55-gallon drums.

High electrical energy equipment was utilized on the site that demanded the presence of high voltage transformers and electrical switches. Oils, containing polychlorinated biphenyls (PCBs), served as the prime dielectric fluids used in the transformers and capacitors that occupied the premises.

In 1996, when operations ceased, the facility was vacated pending ongoing efforts to market the facility. During this time, some of the capacitors were removed from the premises. However, six large transformers and a few capacitors, all of which contained dielectric fluids, remained on the site.

At the time of the spill incident, to be discussed below, several 55-gallon drums, 5-gallon pails, several pits, and two Above Ground Storage Tanks (ASTs), were identified at the site and were suspected of containing various materials formerly used in the day to day operations of the plant.

According to Mr. Martin Letts of Letts Industries, over the years, DWSD has monitored the storm sewer system that surrounds the site. The most recent monitoring and analysis made by DWSD was in 1996. Mr. Letts further stated that DWSD documents indicated no out of compliance concentrations of PCBs or any other constituents were associated with the Letts facility.

### **4.0 INCIDENT DISCOVERY**

On March 30, 2000, U.S. Environmental Protection Agency (EPA) inspectors were checking area properties with a potential for illegal dumping in the vicinity of the Letts facility to alert property owners of illegal dumping. The U.S. EPA inspectors reported that the Letts facility appeared to have been vandalized. They observed that four of the six transformers had been toppled over and their contents spilled. They concluded that the contamination might have been carried by storm water onto the sidewalk and into the catch basin immediately in front of the facility on West Jefferson Avenue. The U.S. EPA. notified the property owner (Letts Industries, Inc) on March 31, 2000, who in turn, contracted ENMANCO

## 5.0

## SPILL ASSESSMENT

ENMANCO personnel were first dispatched to the site at 12:30 PM on 3/31/2000. Upon arriving ENMANCO observed the following:

- The catch basin along West Jefferson appeared to be impacted with oil.
- The truck well was filled with water and a sheen was observed on the water.
- Oil stains were observed across the concrete of the steel yard and truck well areas.
- Four (4) transformer carcasses were observed to be lying prone on the ground in the steel yard area.
- Two (2) transformers were positioned on the main power pad in the steel yard area.
- Several 55-gallon drums and 5-gallon pails were sited in various areas on the site.
- Fracture cracks were evident in the concrete of the steel yard and also under the east wing of the hammer shop in Building 2 (Please refer to Figure #2).
- Two ASTs were observed on in the northwest section of the property.

Based on visible observations across the entire site, twelve (12) areas were observed to have visible staining. However, only two areas, namely the steel yard vicinity and the DWSD catch basin #1 (see Table 1, Areas 1 and 2) were determined to be directly impacted by the PCB-containing oil spill from the transformers.

For purposes of identification, ENMANCO numerically designated areas of the spill, as well as the areas where staining and various containers were sited, on an attached site diagram (**Figure #2**). The general description of these areas is as follows:

**TABLE 1: Depicts areas of containers and staining resulting and not resulting from spill**

AREA	DESCRIPTION
1	Steel yard, truck loading dock, main electrical pad containing 2 transformers and 4 carcasses, 3 capacitors and a circuit breaker. Exclusion Zone (EZ).
2	Storm sewer system including both catch basins along West Jefferson Avenue and manholes along alley way. Exclusion Zone (EZ).
3	Hammer Shop, 2 pits, surface stained area, and 3 drums
4	Northwest storage yard area and location of 2 ASTs, 13 drums and stained surface areas.
5	Pit located in shear room.
6	2 Drums and floor stains in air compressor room.
7	3 Drums along east wall of hammer shop.
8	Unlabeled drum and medical waste along north wall of hammer shop.
9	2 Drums in shear shop.
10	Four (4) drums on south side of maintenance crib.
11	Eight (8) 5-gallon pails in tool crib and one (1) 55-gallon drum in die room with stained surfaces.
12	Four (4) 55-gallon drums, one (1) pail, and stained surface.

## 6.0 INITIAL RESPONSE ACTIONS

On March 31, 2000, ENMANCO arrived at the site. ENMANCO personnel were dressed in modified Level C personnel protection (tyvek suiting, booties, hardhats, surgical gloves under polyethylene gloves, goggles and respirators). West Jefferson Avenue was blockaded from St Anne Street to 21<sup>st</sup> Street.

The Respondent retained a security company to secure the site from public access. West Jefferson Avenue was cordoned off to protect the public from any potential encounter with the spilled PCB oil.

ENMANCO collected two (2) samples: #1 from the truck well and #2 from miscellaneous debris and soil (See *Table 2 below for results*). The samples were collected in pre-cleaned glass sample containers that were cleaned in accordance with U.S. EPA cleaning procedures for low level chemical analysis as specified in the U.S. EPA *Specifications and Guidance for Contaminant-Free Sample Containers*.

Samples were maintained under chain of custody procedures and transported in an ice-cooled sample container, to maintain a maximum temperature of 4<sup>o</sup> C to Brighton Analytical Laboratories in Brighton, Michigan for analysis of PCBs. Qualifications of Brighton Analytical Laboratories are provided in **Appendix 3**.

ENMANCO's 6000-gallon capacity vac trailer arrived at the site and was staged on West Jefferson Street in front of the facility. ENMANCO evacuated 5800 gallons of waste water from the truck well in Area 1. Upon arrival of ENMANCO's 40-yard roll off box, 6-mil plastic tarp was placed on the ground and the roll off box was positioned upon it.

ENMANCO bermed the entire south property line with Speedy Dry (adsorbent). ENMANCO shoveled, scraped, and swept all loose debris and materials and placed them into the roll-off box. ENMANCO covered all transformers with 6-mil thickness plastic to eliminate any further contamination that could result from rainfall. This completed activities on site on 3/31/2000.

ENMANCO decontaminated personnel, removed protective equipment and left all materials on site for future proper disposal. Prior to leaving the site, ENMANCO observed that the Respondent had retained a fencing contractor to further secure the site and had retained a 24-hour security guard service to prevent any further unauthorized access on to the site.

On April 3, 2000; ENMANCO returned to the subject property at 8 AM. After adorning proper PPE, ENMANCO vacuumed rainwater, that had accumulated over the weekend in the truck well, into ENMANCO's vac trailer.

A 2500 gallon capacity holding tank was staged on the side walk between the vac trailer and the fence along West Jefferson. After a brief discussion with U.S. EPA representatives, Environment & Ecology personnel, and the Respondent, ENMANCO decontaminated and left the site.

On April 4, 2000, ENMANCO arrived at approximately 8 A.M. and established a temporary support zone in the south section of the die room. An additional 500 gallons of material was pumped from the truck well and placed into the trailer. ENMANCO scraped all sludge and debris out of the truck well.

ENMANCO solidified semi-sludge materials, located in the bottom of the truck well, with an absorbent material. This solidified semi-sludge material was placed (by the bobcat) into the roll off box and was staged on site.

ENMANCO washed the truck well, immediately adjacent concrete, sidewalk, and street with an alkaline detergent solution and rinsed copiously with water, which was properly contained and stored in the vac trailer.

Area 1 was shoveled, scraped, and swept and the debris was loaded into the roll off box by the bobcat. The bobcat was decontaminated and remained on site.

ENMANCO collected four (4) samples from the following areas on 4/4/2000:

**Sample #3: Composite debris and sludge from Area 1;**

**Sample #4: Grab floor scraping from the hammer room floor;**

**Sample #5: Grab oily water sample from the pit in Area 3 in the hammer shop; and**

**Sample #6: Grab water sample from the 2500 gallon capacity staged holding tank, which contained vacuumed water from catch basins and truck well.**

The samples were collected in pre-cleaned glass sample containers that were cleaned in accordance with U.S. EPA cleaning procedures for low level chemical analysis as specified in the U.S. EPA *Specifications and Guidance for Contaminant-Free Sample Containers*.

Samples were maintained under chain of custody procedures and transported in an ice-cooled sample container, to maintain a maximum temperature of 4<sup>0</sup> C to Brighton Analytical Laboratories in Brighton, Michigan for analysis of PCBs.

On 4/7/2000, ENMANCO positioned a 20,000 gallon capacity holding tank (frac-tank) along West Jefferson on the sidewalk next to the 2500 gallon capacity tank and near the Vac tanker sitting on the street.

Respondent contacted Detroit Edison and an electrical contractor and arrangements were made for power drops across the property. From a utility pole, located in the alley at the northeast section of the property a drop was made to ENMANCO's office and utility trailers. An elevated line was extended over the property to provide electrical power to the West Jefferson Avenue side of the site.

The Respondent arranged for the construction of temporary fencing to cordon off 30ft of West Jefferson for a distance of 232 ft beginning at the corner of St Anne Street and West Jefferson Avenue and extending east to west along the front of the facility.

Because of weather conditions (rain and snow) on the evening of 4/7/2000, ENMANCO went to the site on Saturday, 4/8/2000 and vacuumed out the truck well and collected an estimated 500 gallons of waste water into the holding tank.

## 6.1 Analytical Results Obtained

### Samples Collected and Analyzed by ENMANCO 3/31/00 and 4/4/00

Brighton Analytical Laboratory (**Appendix 3**), located at 2105 Pless Drive in Brighton, Michigan analyzed all six (6) collected samples for PCBs. Water samples were analyzed via EPA method 608 and soil/debris samples were extracted and analyzed via EPA method 846-8082. A summary of the results is presented in TABLE 2, below:

**TABLE 2**

Sample ID	1	2	3	4	5	6
Dated Collected	3/31/2000	3/31/2000	04/04/2000	04/04/2000	04/04/2000	04/04/2000
Date Extracted	3/31/2000	3/31/2000	04/04/2000	04/04/2000		04/04/2000
Date Analyzed	4/3/2000	4/3/2000	04/05/2000	04/05/2000	04/04/2000	04/05/2000
Media	water	soil/debris	debris/sludge	floor scrapings	pit oil	water
Method	EPA 608	SW846-8082	SW846-8082	SW846-8082	SW846-8082	EPA 608
Constituents	ppb	ppb	ppb	ppb	ppm	ppb
ARO 1016	ND	ND	ND	ND	ND	ND
ARO 1221	ND	ND	ND	ND	ND	ND
ARO 1232	ND	ND	ND	ND	ND	ND
ARO 1242	ND	ND	ND	ND	ND	ND
ARO 1248	ND	ND	ND	ND	ND	ND
ARO 1254	ND	ND	ND	ND	ND	ND
ARO 1260	13	23000	16000	ND	ND	ND

{Method detection limits for the above analysis varied and the laboratory stated that DLs were elevated due to dilution. The DL for water sample 1 was reported as 1.0 ppb except for ARO 1232, which is 2.0; the DL for sample 2 was reported as 3300 ppb; DL for sample 3 and 4 = 660; DL for sample 5 = 1.98 ppm; and the DL for sample 6 = 10ppb, except for ARO 1232, which is 20pp.}

## **Samples Collected and Analyzed by U.S. EPA - 3/31/2000**

U.S. EPA collected eight (8) samples of various media on 3/31/2000. Samples were collected from each of the three transformers and submitted to CT&E Environmental Services, Inc for chemical analysis. The data obtained confirmed the presence of arochlors 1254 and 1260.

The concentration of arochlor 1254 in transformer #1 was reported to be 750 ppm, while the concentration of arochlor 1260 was reported to be 550 ppm. The concentration of arochlor 1254 in transformer #2 was reported to be 450 ppm, while the concentration of arochlor 1260 was reported as 350 ppm. A liquid sample, collected from the truck well was reported as containing 65 ppm of arochlor 1254 and 50 ppm of arochlor 1260. A soil sample collected near catch basin #1 was reported to have a concentration of 23 ppm arochlor 1254 and 17 ppm arochlor 1260.

## **7.0 OTHER AREA ASSESSMENT**

Although containers, floor stains, and pits located throughout the facility were not a result of the spill that occurred, the Consent Order specified that these issues (depicted in Areas #3 - #12 on the site plan) be addressed.

On Wednesday, October 11, 2000, a walk through of the site was completed and specific areas of concern were confirmed. Twenty seven (27) 55-gallon drums, six (6) pails, and two (2) above ground storage tanks were identified in Areas 3, 4, 6, 9, 10, 11, and 12. Medical waste in the form of used syringes and needles was found in Area 8. Pits were observed in Areas 3, 6, and 12. The sidewalk along West Jefferson Avenue in Area 1, was observed to be stained.

## **8.0 CLEAN UP PROCEDURES**

Prior to commencing clean up procedures, a support zone was established. An office trailer (command post) and support trailer, with showers and facilities for emergency, was located on the west side of the property in Area #4 (Please see Figure #2). This area was identified as the support zone for this project.

The support trailer contained wash sink, showers, first aid equipment and supplies, stretcher, blanket, and fire extinguisher. PPE was also staged in the support trailer. The south section of the die room (for personnel) and the area south of the die shop in Area #2, which is fenced (for machinery) was identified as the contamination reduction zone and was the transition area between the contaminated area and the *clean area*. Workers and machinery were decontaminated in the contamination reduction zone area. The facility remained secure and continued on a 24-hours per day, 7 days per week basis by patrolling security personnel.

## A Removal of Source of Spill

The PCB transformers and carcasses, the capacitors, and the switch gear were contained, removed, and properly disposed in accordance with the subcontractors' (Dynex/TCI) work plan submitted to EPA on Friday, 4/7/2000 along with ENMANCO's work plan to complete stabilization of the site. Dynex/TCI performed the following tasks:

- Mobilized to Site with L-8000 licensed, enclosed container disposal truck;
- Drained and removed two (2) GE 69 gallon capacity 150 KVA >500 ppm PCB containing transformers; four (4) carcass; three (3) PCB capacitors; and a >500 ppm PCB oil circuit breaker;
- Provided, prepared and processed all paper work as required by EPA and state regulators;
- Placed plastic under draining hose and valve before draining pumps;
- All transporting drums remained in the containment truck during the pumping of oil from the transformers;
- Drained transformers into new UN 1A1 1/8.350 drums;
- Loaded transformers via crane onto disposal truck;
- Equipment was transported from truck into Dynex= one (1) year PCB storage facility located in Farmington Hills, MI;
- Listed equipment onto Michigan Manifest and Continuation sheet;
- Labeled all equipment loaded onto truck before transporting;
- Unloaded equipment at Dynex Facility in Farmington Hills and temporarily stored in a properly designated and constructed storage area while awaiting pick up and transport to Trans-Cycle Industries (TCI), which is an EPA approved PCB disposal facility.

A certificate of disposal was issued from TCI. After TCI transported all of the removed equipment, it was processed using Total Transformer Reclamation Method as follows:

In this process the transformer was shipped to an EPA approved facility where the residual fluid was drained. The transformer was then flushed and disassembled. All components were cleaned of PCBs. The coils were unwound and stripped of paper insulation. The copper, iron laminations, transformer tank and hardware were decontaminated, smelted and recycled. The insulation material removed from the transformer was shipped to an EPA approved incinerator along with the fluid and both were incinerated.

The manifest and certificate for the disposal of the PCB containing equipment are provided in **Appendix 4**. Information on Dynex/Trans Cycle Industries is provided in **APPENDIX 5**, along with details of their process and procedures.

## **B Directly Impacted Area #1 (Concrete)**

Based on the analytical results obtained {Table 2} on samples collected by ENMANCO and U.S. EPA, arochlors 1260 and 1254 of the PCB family (CAS 1336-36-3), appeared to be the prime contaminants of concern. Arochlor 1260 is assumed to be 60% chlorine content by weight; and arochlor 1254 is assumed to be 54% chlorine content by weight. These arochlors are highly resistant to biodegradation but are quite soluble in organic solvents. The spill impacted surface area, located within Area #1 was concrete and as such was classified as a low contact industrial surface.

ENMANCO concluded the best decontamination procedure to be the removal of the impacted concrete surface, which is denoted with a red outline within Area #1 {Please see Figure #2}. The outlined and targeted area for decontamination was comprised of approximately 5500 square feet of concrete surface area. This surface area included a three-foot (3ft) buffer that bordered around the entire spill impacted area.

It is noted that the floor surface in the north wing area of the hammer shop and the floor in shipping office and in that section of Area #1, where the former capacitors were located, were not part of the spill impacted area. Exclusion of these areas was based on the analytical data obtained from samples collected and described above by ENMANCO. These areas are addressed in "Other Area Assessment" in this report.

The procedure for the removal of the concrete consisted of a concrete busting venture followed by loading concrete pieces of under 1000 pounds per load into a truck for transportation and disposal into an EPA approved landfill.

Prior to beginning the concrete removal activities, the area, as specified in red in Figure #2, was demarcated with a non volatile, non-toxic paint, that was, of course, PCB free.

The area demarcated includes those areas of the concrete upon which visible traces of the spill could be observed with the naked eye, plus a one foot buffer followed by a three-foot (3ft) buffer zone surrounding the entire spill area. It is noted that the concrete on the delivery pad and in the truck well was included in the removal.

The equipment selected by ENMANCO to perform the removal operation included a rubber tired CAT backhoe with hydraulic breaker and a 315-Caterpillar excavator. Selection of this machinery was in part dictated by conditions that existed on the site, such as potential overhead obstructions, total operating area, etc. Based on ENMANCO's many years of experience in removing concrete, the selected equipment was deemed adequate to effectively and efficiently accomplish the job. This equipment is part of a fleet of similar machinery that ENMANCO leases from Michigan Caterpillar on an ongoing basis.



Whether owned or leased, ENMANCO employs the same high standard of safety by properly decontaminating equipment. Decontamination of the machinery used on the site was accomplished by power washing with an alkaline solution followed by a neutral power rinse. All washings were collected into a holding tank and retained on site until proper disposal was determined as a function of the waste analysis performed. All PCB containing materials were transported to an approved PCB disposal facility.

All concrete was placed into roll-offs that were lined with 6-mil plastic. The PCB impacted concrete, removed as a solid, was transported, upon EPA's approval, to EQ in Belleville, Michigan and disposed into a PCB cell in EQ's chemical waste landfill, where records are required to be maintained for at least 20 years after the landfill is no longer used for disposal of PCBs. It was confirmed that EQ would accept the PCB impacted concrete.

Dust control procedures and protection of personnel were addressed in the Health and Safety Plan (HASP). Real time particulate dust monitors were used to measure airborne particulate concentration during removal of the concrete in the spill area. One shall was placed upwind and two were placed downwind of the work area. These units were high sensitivity nephelometric monitors that sampled the air at a constant regulated flow rate by means of a built in diaphragm pump. The light scattering configuration of each unit was optimized for the measurement of airborne particulate concentrations.

The detected signal was processed by state of the art lock-in circuitry followed by high resolution digitization, that achieved ultimate detectability of atmospheric Rayleigh scattering fluctuations. In addition to a high sensitivity, the real time particulate monitors had a wide measurement range from  $0.1 \mu\text{g}/\text{m}^3$  to  $400 \text{ mg}/\text{m}^3$ . The digital display of the units provided both real time and time-averaged concentrations. Near infrared source out-put feedback control provided drift free operation and temperature stability. For zeroing of the monitor, an electronically controlled latching solenoid valve diverted the entire filtered air stream through the optical sensing stage in order to achieve a "zero" air reference.

In addition, instrument span checks (secondary calibration) were performed by turning a knob on the unit's back panel, which inserted a built-in optical scattering/diffusing element into the filtered air stream. On-screen diagnostic indicators and automatic shut-off for low battery conditions helped ensure the monitor's correct operation and data storage.

The unit provided continuous digital output by means of an RS232 dataport as well as analog output, and a switched output for selectable high level alarm with a built in audible signal. After passing through the optical sensing stage of the monitor, all particles were retained on a HEPA filter. Part of the filtered air stream was then continuously diverted through and over all optically sensitive areas (lenses, light traps, etc.) to form a continuous air curtain, which protected against particle deposition.

This design, in conjunction with a highly reliable diaphragm pump, ensured long-term maintenance-free operation. ENMANCO rented the three MIE real time aerosol monitors. Engineering controls necessary for elevated air quality samples detected during the site working hours were comprised of misting with water. Further engineering controls necessary for elevated air quality samples detected during removal of the concrete were not necessary. All air monitoring data collected during the concrete removal process are provided in **Appendix 6**.

Approximately 288,017 tons of PCB impacted concrete was removed from the site and properly disposed in EQ's U.S. EPA approved landfill. Manifests confirming disposal of these materials are provided in **Appendix 7**.

### **C Impacted DWSD Sewer System**

Based on the analytical results obtained, 13 ug/L (0.013 mg/L), arochlor 1260 was detected in an oily water sample collected in the truck well (Sample #1, collected by ENMANCO). A nonaqueous liquid sample collected from the catch basin by the START contractor was reported as non-detect for PCB. Soil near the sewer, collected by the START contractor, was reported to contain a PCB concentration level of 23 ppm arochlor 1254 and 17 ppm of arochlor 1260.

DWSD submitted to U.S. EPA, a letter (**Appendix 8**) which specified a scope of work for cleanup of the DWSD's sewer system surrounding the site. It is noted that DWSD's original scope of work requested cleaning of all manholes surrounding the site out to DWSD's outfall, east of the site, into a 7ft sewer that runs north-south through the alley that is west of 18<sup>th</sup> Street

Subsequent to that written scope of work, DWSD submitted a Change Order (5/15/2000) and stated that the washings of their sewer system should be restrained to the catch basins and manholes immediately surrounding the site. ENMANCO implemented DWSD's scope of work to clean up any PCB that impacted the DWSD sewer system (**Figure #3**).

Prior to beginning the sewer cleaning effort, sludge and water samples were collected from each catch basin and sump along the DWSD defined path for cleaning.

On 5/15/2000, the collected samples were submitted, under chain of custody, to Quantum Laboratories, Inc., a qualified laboratory, for analysis of PCBs. Qualifications of Quantum Laboratories, along with their QA/QC manual are provided in **Appendix 9**. Analytical tracking information, consistent with OSWER Directive No. 9240-2B, (for this and all other analyses) is provided in **Appendix 10**.

Split and/or duplicate samples were made available to U.S. EPA; however, U.S. EPA did not take any split samples for analysis. Notice of all sample collecting activities were made known to U.S. EPA not less than 3 business days in advance of any sample collection activity.

The analytical results obtained upon analyzing water samples collected from sump 1 (MH1), sump 2 (MH2), sump 3 (MH3), catch basin #1 (CB1), and catch basin #2 (CB2) are summarized in **Table 3**. The complete laboratory report, along with appropriate QA/QC data, may be found in **Appendix 11** and listed as Report 1004.

**TABLE 3**

Parameter	Sample (ug/L)					Detection Limit
	MH1	MH2	MH3	CB1	CB2	
Arochlor 1016	< D.L.	<1.0	< D.L.	< D.L.	< D.L.	0.2
Arochlor 1221	< D.L.	<1.0	< D.L.	< D.L.	< D.L.	0.2
Arochlor 1232	< D.L.	<1.0	< D.L.	< D.L.	< D.L.	0.2
Arochlor 1242	< D.L.	<1.0	< D.L.	< D.L.	< D.L.	0.2
Arochlor 1248	< D.L.	<1.0	< D.L.	< D.L.	< D.L.	0.2
Arochlor 1254	< D.L.	<1.0	< D.L.	< D.L.	< D.L.	0.2
Arochlor 1260	< D.L.	<1.0	< D.L.	<b>1000</b>	< D.L.	0.2
Surrogate Standards		Percent Recovery				Acceptance Limits
TMX	84.5%	79.5%	82.0%	111%	61.5%	40-125%
DCB	88.0%	87.0%	88.0%	115%	74.0%	50-120%

Reference is made to Figures #2 and #3, which depict the specific locations of the above analyzed catch basins and sumps. As may be seen above, only catch basin #1 (CB1), which was located on West Jefferson in front of the steel yard gate and initially observed to be impacted with oil, was identified as containing arochlor 1260 at a concentration of 1000 ppb (parts per billion).

The following scope of work was implemented in accordance with DWSD's written specifications as provided in a letter to U.S. EPA dated October 27, 2000 (Please see Appendix 8):

- Cleaned and removed all sludge and organic material followed by a power wash of the catch basins (CB#1) and (CB#2) located on West Jefferson Avenue in front of the steel yard and all sumps inside the site, as well as the pipes connecting the catch basins and sumps to the sewer line in the alley north of the facility.
- Cleaned and removed all the sludge and organic material followed by a power wash of the alley from MH#3 at the west to MH#2 at the east.
- Cleaned and removed all the sludge and organic material followed by a power wash of the alley from MH#3 at the west to MH#2 at the east.
- Cleaned and removed all the sludge and organic material followed by a power wash of MH#1 on Jefferson at the south-east corner of the facility.

During the cleaning, reasonable efforts were taken to prevent any solid or oily residues from being dumped into the Jefferson interceptor. These materials were properly disposed in accordance with U.S. EPA requirements. No liquid or solid waste generated during the sewer cleaning was discharged into the sewer system as ENMANCO took all precautions to ensure that this did not happen.

DWSD personnel were on site for sewer cleaning. ENMANCO cleaned and removed sludge and organic material from sewers and placed debris into a 20-yard roll-off container, along with remaining PCB burdened concrete destined for disposal at EQ in PCB cell.

ENMANCO power washed CB2 east to an in-line trap and vacuumed back out. (See Figures 2 & 3). Washings were contained in holding tanks standing on site to be treated later. ENMANCO jet washed CB1 west to CB2 and pulled washings through and out of CB2. ENMANCO vacuumed out residual washings at CB1 and rewashed and vacuumed C2. All washings were contained on site for subsequent treatment, via a water treatment system (discussed below).

Using confined space entry technique, ENMANCO plugged off MH#2, located in the alleyway near St Anne Street. ENMANCO jetted water into MH#2 and extended the jet stream west for approximately 150ft and passed MH#3 toward 21<sup>st</sup> Street. Vacuumed back to MHA#2, and collected contained washings for subsequent treatment. Prior to conducting the above work, both the Industrial Waste Control Division and Sewer Maintenance and Repair Section of DWSD were notified to allow their personnel time to be on site during the work.

A criteria was established such that if the results indicated PCB concentrations of  $<10\mu\text{g}/100\text{cm}^2$ , the sewer system would be considered to be within DWSD's acceptable criteria. If levels were found to exceed the DWSD's criteria, the power wash process would be repeated until samples were obtained with concentrations within acceptable criteria limits. It was not necessary to implement this contingency plan.

## **D Other Contamination**

Areas 3, 4, 6, 8, 9, 10, 11, and 12 (as identified in the Site Drawing in Figure #2) contained drums, pails, pits, two ASTs, and floor stains on the site. This section also addresses a small portion of sidewalk on West Jefferson that was directly impacted by the spill and is included in Figure #2 in Area #1.

### **1.0 Medical Waste**

The medical waste (sharps) were loaded into a sharps container and staged on the west side of the property to await pick up, transport and disposal by Stericycle (formerly BFI Medical Waste).

## 2.0 Drums, Pails and Containers

In each area where containers/drums/pails were identified, the containers were staged, and then sampled for disposal purposes. Drums and pails were inventoried by ENMANCO and staged in two locations on the site: One staging location was east of the steel yard and the other was west of the steel yard. Plastic sheeting was placed under the staging areas.

Staging was designed to allow adequate ventilation during container sampling. Each drum, pail, and pit was given a discrete identification number and notation was made as to the geographical location of each item inventoried. Colored labels, crayons, were used to identify containers. ENMANCO's identification system did not mask any existing labels or identifiers. **FIGURE #4** of this report demarcates the former location of each container prior to staging.

Prior to any sampling of containers, each container was inspected for a label to attempt to identify the contents of the container. Information from the owner as to the contents of each container, based on available MSDS, shipping documents, general knowledge and experience of owner and former personnel at the facility when it was operational, was relied upon. Because the owner had confirmed that no radioactive materials ever existed in the containers or on the site, there was no basis to check for radioactivity.

Drum sampling was performed in accordance with ASTM Standard Practice 6063. When opening a drum, the bung device that secured the lid was removed slowly, to allow any pressure of vacuum to equalize. Pails with snap on lids were difficult to open. Care was taken to avoid splashing the contents when opening all containers. ENMANCO removed any and all material on top of the drum before opening.

Drums were opened, sampled and closed individually to minimize possible volatilization of organic compounds and also to minimize exposure to the person sampling to the materials. ENMANCO was aware that materials in layers (e.g., oil and water) could become mixed together when moved. However, because the objective of sampling was solely for waste disposal, irrespective of phase, no settling out time was required.

Each drum and pail was individually sampled for waste characterization and analyzed in order to determine proper disposal as a function of hazardous vs non-hazardous. All samples from drums, pails, tanks and pits were collected with an individual new Coliwasa tube (5ft) for each pail, drum, tank or pit sampled.

Given the age and condition of the drums, pails, and ASTs, as well as the fact that the facility has not operated for the past five years, 23 of the 34 identified drums, 8 of the 9 pails and 1 of the 2 ASTs were sampled. Containers not sampled were either empty or distinguishably identifiable as to contents in duplicate to a container previously sampled.

An inventory (**Table 4**) was prepared to identify the original location of each drum/pail and the area in which each was staged. A cross reference is made to the sample that was collected from the associated drum/pail.

**TABLE 4** Inventory of Drums Pails and Tanks

<b>DRUM</b>	<b>ORIGINAL LOCATION AREA</b>	<b>STAGING AREA</b>	<b>COMMENTS</b>
1	Area #4 Near flash scrap truck dock	West Staging Area	Empty
2	Area #4 Near flash scrap truck dock	West Staging Area	Sample #50
3	Area #4 Near flash scrap truck dock	West Staging Area	Sample #49
4	Area #4 Near flash scrap truck dock	West Staging Area	Sample #48
5	Area #4 Near flash scrap truck dock	West Staging Area	Sample #47
6	Area #4 Near flash scrap truck dock	West Staging Area	Sample #46
7	Area #4 Near flash scrap truck dock	West Staging Area	Sample #37
8	Area #4 Near flash scrap truck dock	West Staging Area	Sample #36
9	Area #4 Near flash scrap truck dock	West Staging Area	Sample #38
10	Area #4 Near flash scrap truck dock	West Staging Area	Empty
11	Area #4 Near flash scrap truck dock	West Staging Area	Empty
12	Area #4 Near flash scrap truck dock	West Staging Area	Sample #14
13	Area #4 Near flash scrap truck dock		Sample 76
14	In cold punch & trim area	West Staging Area	Sample #17
15	Area #6 air compressor area	West Staging Area	Sample #18
16	Area #6 air compressor area	West Staging Area	Sample #19
17	Area #7 Hammer Shop	West Staging Area	Empty
18	Area #7 Hammer Shop	West Staging Area	Sample #20
19	Area #3 Hammer Shop; small little drum cut down	West Staging Area	Sample #21
20	Area #7 Hammer Shop	West Staging Area	Empty
21	Area #3 Hammer Shop; Overfull drum near pit	West Staging Area Overpacked because drum was full	Sample 23
22		West Staging Area	Empty
23	Area #8 Near medical waste	West Staging Area	Empty
24	Area #12 near shipping office	West Staging Area	Sample #16
25	Area #12 near shipping office	West Staging Area	Empty
26	Area #12 near shipping office	West Staging Area	Empty
Pail 27	Area #12 near shipping office	West Staging Area	Sample 77
28	Area #12 near truck loading dock off of hot zone	West Staging Area	Sample #15
29	Area #11: Tool crib area near die room	East Staging Area	Sample #29

**TABLE 4 [CONTINUED]**

DRUM	ORIGINAL LOCATION AREA	STAGING AREA	COMMENTS
Pail 30	Area #11: Tool crib area near die room	East Staging Area	Unable to sample; Label indicated nontoxic, non- corrosive, water soluble. Could not open
Pail 31	Area #11: Tool crib area near die room	East Staging Area	Sample #33
Pail 32	Area #11: Tool crib area near die room	East Staging Area	Sample #34
Pail 33	Area #11: Tool crib area near die room	East Staging Area	Sample #39
Pail 34	Area #11: Tool crib area near die room	East Staging Area	Sample #22
Pail 35	Area #11: Tool crib area near die room	East Staging Area	Sample #32
Pail 36	Area #11: Tool crib area near die room	East Staging Area	Sample #31
Pail 37	Area #11: Tool crib area near die room	East Staging Area	Sample #30
38	Area #10: Near maintenance Crib	East Staging Area	Sample #28
39	Area #10: Near maintenance Crib	East Staging Area	Sample #26
40	Area #10: Near maintenance Crib	East Staging Area	Sample #27
41	Area #10: Near maintenance Crib	East Staging Area	Sample #25
42	Area #9: Near Shear room	East Staging Area	Empty
43	Area #9: Near Shear room	East Staging Area	Empty (small drum)
AST #1		West Staging Area	Sample 74
AST#2		West Staging Area	Empty
Med Waste	Area #8 Medical Waste placed into sharps container for Stericycle Disposal	West Staging Area	Eight 1-cc. Syringes Not Sampled

No attempt was made to combine any of the materials in the containers because there was no possible method to visually determine similar substances. No accurate information on the contents of those containers could be provided from any reliable source.

### 3.0 Pits and Floor Stains

The open pits, containing liquid materials, were also sampled. Using Coliwasa tubes, samples were collected from two open pits (one in the former Hammer Room and another in the former Shear Room) within the facility. At the request of the U.S. EPA's OSC, an excavation to a depth of approximately 6ft was advanced to determine if contamination was buried in the pits alleged to be part of the hammer shop's operations.

Using a backhoe, debris was removed from the indoor hammer pit and placed on a large plastic tarp next to the pit. A grab sample was taken of the sand within the pit and the sample was sent to Quantum Laboratory under chain of custody for analysis. Analysis of the sample collected from the bottom of the pit revealed no PCB presence. (See *Report 1070 in Appendix 11*).

In the areas where floor staining was observed, grab samples were randomly collected from each stained area. These samples were collected as either scrape samples or wipe samples. Disposable scraping scoops were used to collect scrape samples. Sampling kits comprised of 100 cm<sup>2</sup> templates and sampling wipes were used to collect a discrete sample from each sampling area where staining was found on a hard surface. The sampling wipes were properly containerized in pre-cleaned containers and maintained and preserved prior to delivering to Quantum Laboratories, under chain of custody, for extraction and subsequent determination of PCB concentration via SW-846-Method 8082.

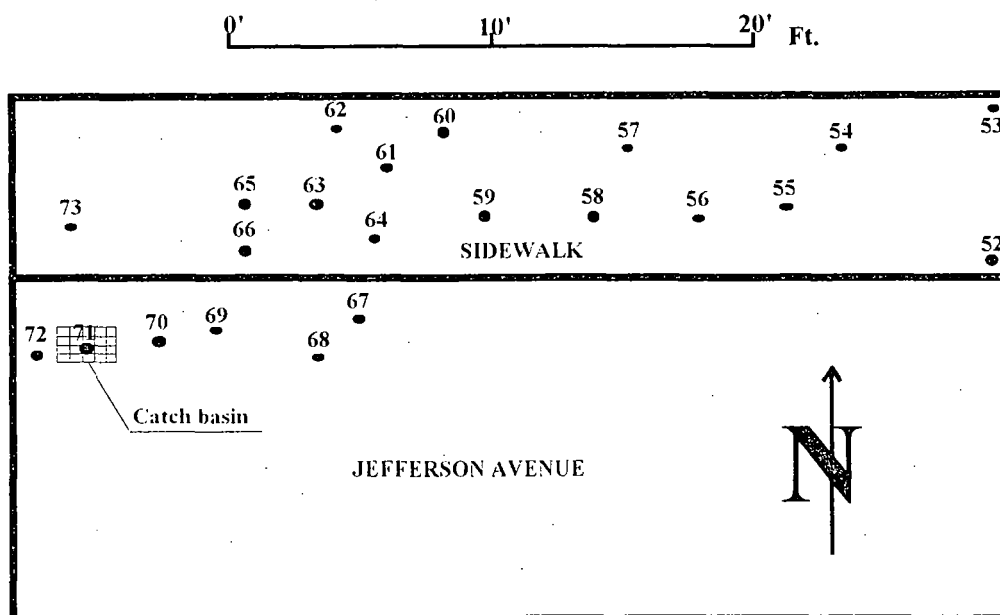
The two ASTs on the subject property were sampled for determination of waste disposal.

### 4.0 Sidewalk

In accord with U.S. EPA's request to sample the public sidewalk adjacent and immediately south of the subject property on West Jefferson Avenue, approximately 24 wipe samples were collected along the public sidewalk and street on West Jefferson Avenue. Using 100cm<sup>2</sup> templates, hexane saturated wipe pads were used to wipe the area defined by the template and each sample was placed into a 4-ounce EPA approved pre-cleaned glass container and maintained in a cooler prior to delivery to the laboratory. **FIGURE #5** provides a scaled site drawing of the sidewalk area and identifies sample location.



## PCB's WIPE SAMPLE LOCATIONS



The number of samples collected was selected with the intent of being able to more or less pinpoint contamination, if found, and thus minimize the extent of sidewalk to remove, if contamination was encountered.

A sample log was prepared which identifies all samples collected (**Table 5**).

**TABLE 5**

SAMPLE	DESCRIPTION
1	Ground scraping from Area #4 under 55-gallon drums numbered 1 - 13
2	Ground scrapings under AST#1 (inside shed)
3	Ground scraping under AST #2 (outside shed) Sl. Oily odor (diesel fuel)
4	Ground scrapings in Area of Drum #14 in Cold Punch and Trim area. Ground noted as dark discoloration. Drum was marked "TRASH". Scrapings observed to be fine sediment.
5	Ground scrapings in Area of Drums #15 and #16 from compressor room. Visibly oily type substance. Slight odor.
6	Stained area in air compressor room. Fine gravel saturated with oily substance. Strong odor with sticky/gluey texture.
7	Floor scrapings in area of Drum #17 in Hammer Shop near electrical panels. Fine silt material. Appeared to be charred soil
8	Floor scrapings from Area of Drum #18 and #19 (half or less of a drum) in Hammer Shop under stairs. Floor scrapings very sticky substance. Has odor of tar.
9	Floor scrapings from area of Drum #20 [almost empty] Appear to be heavy fines; maybe iron oxide
10	Floor scrapings from area of Drum #21 [drum full has to be overpacked]. Scrapings appeared sticky and oil saturated. Odor of used motor oil.
11	Floor scrapings from area of Drum #22. Sticky, saturated, coarse gravel and silt; Odor.
12	Floor scrapings from area of Drum #23. Oily, oxidized substance. No odor.
13	Floor scrapings of area of Pails # 24 - #27. Oily substance.

*The following drums are staged on the west side of the property in the vicinity of the Flash Scrap Truck Dock.*

- 14 Drum 12
- 15 Drum 28; very thick black oily substance
- 16 Drum 24; Light black oily substance
- 17 Drum 14; Oily water
- 18 Drum 15; Red fluid (transmission fluid)
- 19 Drum 16; Red fluid (transmission fluid)
- 20 Drum 18
- 21 Drum 19; Overpacked
- 23 Drum 21 Sampled on 10/25/2000
- 24 Pit in Hammer Room; sample collected from sludge material from bottom of pit
- 36 Drum 8
- 37 Drum 7
- 38 Drum 9
- 46 Drum 6
- 47 Drum 5
- 48 Drum 4
- 49 Drum 3
- 50 Drum 2
- The following samples were collected from drums, and pails or taken from areas on the east side of the facility in or near the Die Room*
- 25 Drum 41; Expert Oil Co - Lubricating oil; thick heavy oil
- 26 Drum 39; thin oil
- 27 Drum 40 ("Waterless Handsoap" written on drum
- 28 Drum 38
- 29 Drum 29 "ZipOCreme- Waterless Handcream for Dirty Hands" written on label ;  
Appeared to be thick emulsion
- 30 Pail 37
- 31 Pail 36; Composite of several hammer pit samples previously collected in individual  
containers and placed into the pail. All appeared to be the same oil
- 22 Pail 34; Light oil
- 32 Pail 35; (Sealed virgin material with green color; oily
- 33 Pail 31; Composite of several hammer pit samples similar to above but in a different pail
- 34 Pail 32; Bond setting mortar
- 35 Pit in Shear Room
- 39 Pail 33; "Troulize- a bonding mortar by National Refractories & Minerals Co." on label
- 40 Floor scrapings in area of Drum 29..[where the turtle was]
- 41 Floor scrapings from area of Drum 30
- 42/51 Wipe sample from shear room under area of Drums #31 - #37
- 43 Floor scrapings under Drum 43
- 44 Floor scrapings in area under Drum 38
- 45 Floor scrapings of area under Drum 42

Samples #52 thru #73 were wipe samples taken on the public sidewalk on West Jefferson in front of the steel yard.

All samples were submitted to Quantum Laboratories, under chain of custody for analysis. It is noted that Quantum Laboratories subcontracted some of the work to KAR Laboratories, Inc in Kalamazoo, Michigan. ENMANCO reviewed KAR's qualifications and found them to be acceptable. A copy of KAR's Quality Assurance Manual and capability statement may be found in **Appendix 12**

Analytical results of scrape samples, comprised of soil, sludge, and/or debris were reported in units of mg/Kg or ug/Kg and analytical results of wipe samples were reported in units of ug/100 cm<sup>2</sup>. The laboratory's QA/QC was obtained and considered in the assessment of the reported laboratory data.

The complete analytical report (*Report Number 1049/1050*) on the above samples, may be perused in **Appendix 11**.

The following table (Table 6) presents salient features of the analytical results, which include the identification of {1} containers in which materials exceed regulatory limits for the indicated parameters thus affecting disposal method; {2} PCBs were identified, such as in floor scrapings and thus requiring further remedial action; and {3} PCBs in on the sidewalk on West Jefferson Avenue.

**TABLE 6** The following samples exceeded regulatory limits for the indicated parameters.

Sample ID	Sample Description	Parameter	Result	Regulatory Limit	Units of Measure
7	Floor Scrapings Under Drum 17	TOX	1100	1000	mg/Kg
8	Floor Scrapings Under Drum 18 and 19	TOX	2300	1000	mg/Kg
11	Floor Scrapings Under Drum 18 and 19	TOX	1800	1000	mg/Kg
28	Drum 38	TOX	3400	1000	mg/Kg
32	Pail 35	TCLP Barium	499	100	mg/L
41	Floor Scrapings Under Drum 30	TOX	1400	1000	mg/Kg
44	Floor Scrapings Under Drum 38	TCLP Lead	13.1	1.0	mg/L
49	Drum 3	TOX	1500	1000	mg/Kg

Based on the analytical data obtained, all containers were found to contain non-haz materials, with the exception of Drum 3, Drum 38, and Pail 35. All containers, with the exception of the three identified above, were vacuumed out and the contents transported to and disposed at Rich Coast. The empty drums of all the non hazardous materials were either recycled or destroyed, as a function of condition.

Because total organic halides exceeded the regulatory limit of 1000 ppm, a solvent scan was performed to further determine proper disposal for Drum #3. The laboratory reported a finding of 1500 mg/Kg. The regulatory limit is 1000 mg/Kg. However, the solvent scan indicated no PCBs present and therefore Drum #3 was disposed under manifest as non-hazardous waste.

The sample for Pail #35 was reported by the laboratory as having a TCLP barium concentration of 499 mg/L, which exceeded the regulatory limit of 100 mg/L for barium.

Therefore, a profile was prepared and the material in Pail #35 was disposed of as a hazardous substance.

Sampling of Drum 38 resulted in the removal of all material present in Drum 38, so there was nothing left to dispose.

The total quantity of all liquid materials removed equaled 737 gallons. 732 gallons were non-hazardous and only 5 gallons were classified as hazardous, and that classification was due to the presence of barium in excess of the regulatory limit.

The results of the floor scrapings beneath the containers in the former Hammer Shop area and in sections of the former Shear Room area, revealed the presence of arochlors 1268, 1260, 1254, and 1248

The remedy selected to address these areas was simply to scarify the floors of the former Hammer Room and Shear Room with subsequent loading of the scrapings into a roll-off box for subsequent proper disposal at EQ under manifest. (Power washing of these floors was absolutely inappropriate as additional unwanted contaminated water would result.)

As may be seen in **TABLE 7**, sidewalk wipe samples did exceed 10ug/100cm<sup>2</sup> for four samples, (namely 61, 62, 63 and 64)

#### Polychlorinated Biphenyls (PCB) Wipes West Jefferson Avenue Sidewalk

<u>Sample Number:</u>	<u>53</u>	<u>54</u>	<u>55</u>	<u>56</u>	<u>57</u>	<u>58</u>	Detection Limit	Units
Arochlor 1260	0.19	0.10	0.14	0.17	0.13	1.8	0.1	□g/100cm <sup>2</sup>
<u>Sample Number:</u>	<u>59</u>	<u>60</u>	<u>61</u>	<u>62</u>	<u>63</u>	<u>64</u>		
Arochlor 1260	0.72	6.4	<b>39</b>	<b>16</b>	<b>54</b>	<b>17</b>	0.1	□g/100cm <sup>2</sup>
<u>Sample Number:</u>	<u>65</u>	<u>66</u>	<u>67</u>	<u>68</u>	<u>69</u>	<u>70</u>		
Arochlor 1260	6.0	7.2	1.0	0.41	0.84	3.9	0.1	□g/100cm <sup>2</sup>
<u>Sample Number:</u>	<u>71</u>	<u>72</u>	<u>73</u>					
Arochlor 1260	0.13	0.48	< D.L.				0.1	□g/100cm <sup>2</sup>

As a result, an approximately 25 to 50 sq ft section of the cement sidewalk was removed and disposed in a roll-off box and subsequently properly disposed at EQ under manifest. The 25ft to 50 ft section of sidewalk concrete was replaced.

## **E. Disposal Treatment for Run-off Water**

Since the inception of this project, rain and precipitation across the PCB impacted ground surface on the facility resulted in the accrual of potentially contaminated runoff water. With the approval of EPA and authorization of DWSD, on April 18, 2000, ENMANCO placed 6-mil plastic across the exclusion zone of the site and extended the plastic over a 3ft to 4 ft border.

The plastic was anchored with bricks and absorbent materials. The PVC line (from the roof drains) that feeds into the truck well was plugged with a pipe plug. The truck well was bermed off with absorbent material. As a result of these activities, PCB-free water was routed down the delivery ramp into the street.

ENMANCO inspected the area for any visible signs of PCB contamination in the runoff water (such as sheens), on a regular basis, and when observed reverted back to collecting the runoff water into it's holding tanks. Inspection was made every other day, unless weather conditions (e.g., precipitation, wind, etc) mandated more frequent inspection intervals. ENMANCO provided, on a weekly basis, at DWSD's request, a written report to DWSD, that described existing site conditions with respect to the above. (**Appendix 13**).

A 20,000 gallon capacity frac tank was initially positioned on site to store collected any potentially contaminated water along with a 6000 gallon tanker trailer and a 2500 gallon holding tank. Over the months that passed, another 20,000 gallon frac tank was positioned on the site in order to have sufficient capacity to accommodate the ever increasing volume of contaminated water. Water was pumped out of the ponding truckwell and into the additional frac tank. In December, when the truck ponding well froze, it was necessary to place calcium chloride over the frozen ponded truck well in order to thaw the ice in order to pump the final remaining water out and into the frac tank.

It was concluded and approved in the work plan, that the best method of disposal of the stored large volume of contaminated water was to treat the collected water on site, with discharge of the treated water into the DWSD system under special permit provided by DWSD. A filtration separation system that removed PCBs and resulted in PCB concentrations that did not exceed 1 ppb in the aggregate and <0.5 ppb Arochlor 1260, was implemented.

ENMANCO selected to use adsorption by granulated active carbon (GAC), which is a widely used technique for removing hydrocarbons from water, to treat the large volume of accrued and collected water on site. Adsorption occurs when the energy associated with a surface of a solid attracts the molecular or ionic species from the water to the solid. The adsorbed material can form a layer on the surface from one to several molecules deep. The amount and properties of the surface as well as the environmental conditions at the surface controls adsorption.

ENMANCO used two 55-gallon drums, in series, as a lead vessel, sample port and a vessel to polish the effluent water. Specifications for the GAC unit are presented in Table 8.

**TABLE 8**

**Carbon Capacity:** 200 lbs of virgin grade GAC per 55-gallon drum, with a 20% allowance for fluidizing the filtration media during back flushing.

**Nominal Flow Rate:** 5GPM

**Empty Bed Contact Time:** 1 Drum: 11.0 Minutes

**Calculation:** 1 Drum: 55 gallons/ 5 GPM = 11 Minutes

**EPA Guideline for minimum contact time** = 7.5 minutes

**Hydraulic Loading:** 1.592 gal/ft<sup>2</sup>

**Calculations:** Bed Diameter: 24 inches  
Bed Area: 452 sq. in (3.14ft<sup>2</sup>)

**Hydraulic Loading** = Flow Rate/Bed Area = 5 GPM/3.14 sq ft = 1.592 gal/sq.ft.

**Volume:** One Vessel: 55-gallon drum = 7.29 ft<sup>3</sup>

**Description of Vessel:** Flow direction = downflow  
Top influent connection = male camlock  
Top pressure gauge  
Top air eliminator  
200 lbs virgin grade liquid phase carbon  
Bottom distributor: 4 12" lg slotted fingers, 0.015 slots  
Material: Steel drum  
Diameter: 24-inches  
Weight: 45 lbs  
Height: 36 inches  
Volume: 55 gallons or 7.29 cubic feet

**Operating temperature:** 50 to 120 degrees F

**Operating Pressure:** 5 -7 PSI

**Method:** Vacuum In, Vacuum Out.

**Average time per vessel:** 20 minutes

ENMANCO utilized an enhancer to the carbon filtration system. A non-corrosive environmentally friendly filtration media, known as A620, was used to augment the GAC to accomplish the desired low to no-level concentration of PCB contamination.

A620, provided by Petroleum Pollution Control is a third generation elastomeric matrix polymer, which is hydrophobic, but absorbs fifteen times its weight of hydrocarbons. Using this technology resulted in hydrocarbons being permanently bonded. The polymer bonds with all types of hydrocarbons, and therefore can not be used as a stand alone filtration media; given its high absorption capabilities, it binds off after a short run.

ENMANCO obtained, on behalf of the Respondent, a "*Special Discharge Permit*" from DWSD. (**Appendix 14**). In order to obtain the permit, an analysis of the water prior to treatment was performed. The laboratory used for this analysis was Midwest Analytical Laboratories. Midwest Analytical Laboratories are in compliance with the U.S. EPA's specifications regarding sampling, analyses, QA/QC, data validation, and chain of custody procedures. Midwest Analytical Labs Statement of Qualifications, QA/QC program and methodologies used for analysis of parameters measured for DWSD are provided in **Appendix 15**.

Midwest Analytical Laboratories personnel were on site to collect pretreated water samples from the various storage containers and areas that existed on site prior to treatment. Samples from the two frac tanks, a 6000 gallon tanker, a holding tank, and the standing water in the former truckwell in the steel yard were collected using ColiWassa waste samplers. Sampling and analysis were conducted in accordance with the EPA protocol in 40 CFR 136. Samples were analyzed for pH, BOD, TSS, P, FOG, metals and toxic organic priority pollutants. DWSD requested these samples be analyzed to provide a base line.

The laboratory report is provided in **Appendix 16** of this report. Detection limits of the method were stated. Any matrix interferences were documented. Higher detection limits, due to dilution are indicated. All analysis reports are supported by a QC report in compliance with DWSD's stipulations and U.S. EPA's requirements.

As may be seen in the data presented, bis (2ethylhexyl) phthalate and arochlor 1260 were detected in only some of the containers and storage areas. However, at the request of DWSD, all water on site was treated. The analysis allowed a basis for DWSD to determine specific analytes to monitor during treatment. As a result arochlors and bis phthalate were monitored prior to discharge.

ENMANCO originally staged the water treatment system off site and delivered it to the Letts Site for completion of setup in a 30ft by 8ft heated trailer to maintain operation temperatures between 50 °F and 75 °F. Oil filled and torpedo (diesel fueled) heaters were used to establish a constant temperature close to 70 °F within the trailer. Electrical power was provided dropping a line across the facility from the northwest corner of the property. The voltage was elevated to 240 volts to ensure 110 volts at the Jefferson Avenue side. As a precautionary measure, a standby generator was brought on site, in the event that electrical power to the area failed due to weather conditions, e.g. ice storm, etc.

Two bag filters preceded the two GAC containing drums and all were arranged in tandem. Flow monitors were placed on the bag filters and the carbon filtration drums. Readings were taken of each flow meter and logged at 30 minute intervals throughout the filtration process. A reproduction of the hand written logs is provided in **Appendix 17** of this report.

GAC was placed into each of the two 55-gallon drums to approximately 6-inches from the top of each drum. Disc-shaped hog hair pads were placed on top of the GAC followed by crushed lime stone. The bag filters had a porosity of 10 microns and were approximately 2 ft high with a 5-inch diameter. The filters were placed into a cylindrical PVC slotted filter bin and placed into the bag filter housing. Piping into the system (from the frac tanks to the treatment system) was heated and was comprised of ¾-inch hose that was wrapped with electrical wire heaters and surrounded by fiber glass insulation and an outer wrap of duct tape.

The system was allowed to equilibrate and stabilize in the presence of non-contaminated water for 24 hours. An external pressure of 9 psi was maintained on the system to ensure a continual flow rate of 3.8 to 5.0 gpm. The constant pressure of 9 psi was provided by a submersible utility pump manufactured by Simer Pump. The water treatment system was operated on a 24-hr basis to minimize the potential for vandalism and also to expedite the process, given the severe weather.

In order to determine the effectiveness of the water treatment system, a prepared control standard of known concentrations of PCBs (arochlors 1254 and 1260) and bis ethyl hexyl phthalate, was prepared by Quantum Analytical Laboratories.

The concentration of the control standard resulted in a concentration of 1 ppm bis (ethyl hexyl) phthalate and 20ppb of PCB 1260, when added to 50 gallons of water. The 50 gallons of water were taken from the truck well ponding area. A sample of the truck well ponding water was used as a blank and was collected for analysis.

A grab sample was collected after allowing the spiked 50 gallons of water to pass through the treatment system. The sample was sent to the laboratory and analyzed for PCBs and bis phthalate on a "quick turn around basis" via a GC scan modification of method 608.

Later, as was done with the monitored samples as treatment proceeded, the PCBs were analyzed via Method 608 and the bis phthalate was analyzed via method 625. Both sets of results are presented in **Table 9**, below

**Table 9: Analytical Results of Blank, Control Spike and Treated Control**

**9A**

SCAN RESULTS (units are ppb for PCBs)	PCBs Arochlor 1260	PCBs Total Arochlors	Bis Phthalate Units are ppm
Water Blank, 12/07/2000, 1600 hours	<0.5	<1.0	<5
Control Spike, 12/08/2000, 930 hours	23.5	48.9	409
Treated Control, 12/08/1000 hours	<0.5	<1	<5

**9B**

PCB Method 608 Units are ppb for PCBs Bis(2-ethylhexyl)phthalate Method 608	PCB Arochlor 1254	PCB Arochlor 1260	Total Arochlors	Bis Phthalate (ppm)
Water Blank, 12/07/2bis 2000, 1600 hours	<0.5	<0.5	<1.0	<0.2
Control Spike, 12/08/2000, 930 hours	30.8	32.0	62.8	1.43
Treated Control, 12/08/1000 hours	<0.5	<0.5	<1.0	<0.2



The above indicated that the treatment system was adequate and that the monitoring technique was reliable and sufficient.

Two 6,000 gallon capacity tankers (identified as 32T and 21T) were positioned in close proximity to the treatment trailer to be used as holding vessels prior to discharge. Tanker 32T was comprised of 2 separate 3000 gallon sections, where each 3000 gallon section was referred to as FH and BH. All valves and piping were wrapped with wire strips and insulation to prevent freezing of water. Hosing from the clean holding tanks to the point of discharge was not heat wrapped.

As water was treated, it was collected in one of the holding vessels (6000 gallon tanker; or the two 3000 (FH and BH) compartmentalized, gallon tanker until the vessel was full. Once a vessel reached full status, collection in that vessel was ceased and resumed in another holding vessel. A representative grab sample from a full holding vessel was then taken, under chain of custody, to Quantum Laboratories for analysis of PCBs and bis phthalate to be quickly analyzed via GC scanning (Modified Method 608). ( It is believed that the bis phthalate resulted from leaching in the plastic holding vessels which is not uncommon.)

The treated water was held until the laboratory provided the monitoring results for each grab sample. Upon announcement from the laboratory that the samples were non-detect for the contaminants of concern, discharge would then commence.

The turn around time for analysis was approximately 4 to 6 hours. For this analysis, ENMANCO retained Quantum Laboratories. Sampling and analysis were conducted in accordance with the EPA protocol in 40 CFR 136.

The analytical data obtained on the monitoring samples analyzed are presented in **Table 10 A and B.**

DWSD specified the discharge parameters in the permit as follows: A daily maximum discharge of 7200 gallons per day; at a not-to-exceed flow rate of 60 gallons per minute, over a 24 hours a day, seven days a week basis. These parameters were allowed, given the severe freezing weather conditions that prevailed. The total not to exceed discharge volume was defined as 50,000 gallons. The treated water was discharged into a catch basin located approximately 10ft east of a utility pole and 14ft south of the south wall of the building (former shipping office) of the Letts Drop Forge Facility on West Jefferson Avenue in Detroit. There was no overflow at any time during the discharge procedure. Prior to commencing discharge, a call was placed to DWSD in accordance with the requirements of the Special Discharge Authorization.

The holding vessels and all equipment removed from the site were first decontaminated and the washings were also treated via the water treatment system. A total volume of **44, 420 gallons of water were treated and discharged.**

In as much as the vicinity of the discharge was off limits to pedestrians and vehicle traffic and was under security guard 24 hours per day, adequate safety for pedestrian and vehicle traffic was maintained at all times during the discharge.

**TABLE 10A**

Sample No.	Sample ID	PCB Results (ug/L)		
		Arochlor 1254	Arochlor 1260	Total Arochlors
1	Water Blank, 12/07/00, 16:00	< 0.5	< 0.5	< 1.0
2	Control Spike, 12/08/00, 09:30	30.8	32.0	62.8
3	Treated Control, 12/08/00, 10:00	< 0.5	< 0.5	< 1.0
4	BH-32T (3000 gal), 12/09/00, 11:11	< 0.5	< 0.5	< 1.0
5	FH-32T, 12/10/00, 14:25	< 0.5	< 0.5	< 1.0
6	BH-32T, 12/11/00, 18:00	< 0.5	< 0.5	< 1.0
7	FH-32T @ 1120 gal Full, 12/12/00, 11:27	< 0.5	< 0.5	< 1.0
8	FH32T @ 3000 gal Full, 12/13/00, 16:00	< 0.5	< 0.5	< 1.0
9	BH32T @ 3000 gal Full, 12/13/00, 17:00	< 0.5	< 0.5	< 1.0
10	21T, 12/14/00, 17:35	< 0.5	< 0.5	< 1.0
11	FH32T @ 3000 gal Full, 12/15/00, 16:00	< 0.5	< 0.5	< 1.0
12	BH32T @ 3000 gal Full, 12/15/00, 16:15	< 0.5	< 0.5	< 1.0
13	BH32T Resample of 12/15/00, 12/16/00	< 0.5	< 0.5	< 1.0
14	21T, 12/16/00	< 0.5	< 0.5	< 1.0
15	FH32T @ 2400 gal, 12/17/00, 16:00	< 0.5	< 0.5	< 1.0
16	Truck Well Ponding Area, 12/18/00, 15:00	< 0.5	< 0.5	< 1.0
17	BH-32T, 12/18/00, 15:00	< 0.5	< 0.5	< 1.0
18	21T, 12/19/00, 17:00	< 0.5	< 0.5	< 1.0

TABLE 10B

Sample No.	Sample ID	bis(2-Ethylhexyl) phthalate (mg/L)
1	Water Blank, 12/07/00, 16:00	<0.20
2	Control Spike, 12/08/00, 09:30	1.43
3	Treated Control, 12/08/00, 10:00	<0.20
4	BH-32T (3000 gal), 12/09/00, 11:11	<0.20
5	FH-32T, 12/10/00, 14:25	<0.20
6	BH-32T, 12/11/00, 18:00	<0.20
7	FH-32T @ 1120 gal Full, 12/12/00, 11:27	<0.20
8	FH32T @ 3000 gal Full, 12/13/00, 16:00	<0.20
9	BH32T @ 3000 gal Full, 12/13/00, 17:00	<0.20
10	21T, 12/14/00, 17:35	<0.20
11	FH32T @ 3000 gal Full, 12/15/00, 16:00	<0.20
12	BH32T @ 3000 gal Full, 12/15/00, 16:15	<0.20
13	BH32T Resample of 12/15/00, 12/16/00	<0.20
14	21T, 12/16/00	<0.20
15	FH32T @ 2400 gal, 12/17/00, 16:00	<0.20
16	Truck Well Ponding Area, 12/18/00, 15:00	<0.20
17	BH-32T, 12/18/00, 15:00	<0.20
18	21T, 12/19/00, 17:00	<0.20

## **9.0 CONFIRMATION OF COMPLETION OF CLEANUP**

### **A Directly Impacted Area #1 (Concrete)**

The objective of the verification sampling and analysis was to confirm compliance with the cleanup specifications in 40 CFR 761.130. Conclusions or extrapolations about spilled PCB concentrations on the subject site were limited to the specific demarcated area within Area #1 (the spill impacted area of concern ) as specified on Figure #2.

Surfaces throughout the spill area, prior to the implementation of the decontamination procedure were all primarily concrete. Subsequent to the decontamination procedure, the area beneath the removed concrete, was soil. A statistical random and biased blended sampling strategy of the soils was used to verify the cleanup. The following specific areas were sampled to confirm completion of cleanup.

- ☐ Main power pad area where transformers were formerly located
- ☐ Section of steel yard in front of main power pad area where two (2) carcasses were found;
- ☐ Section of steel yard just northwest of truck well where two additional carcasses were found;
- ☐ Truckwell front area; Truckwell rear area;
- ☐ Delivery pad, front and rear; and
- ☐ Sidewalk along the south property line before the catch basin

In addition to the above biased sampling locations, the entire demarcated area (indicated with red on Figure #2) was sampled using a grid system. The established grid system was based on the equation  $(\sqrt{A/\pi})/4 = GI$ , which, for the 5500 sq ft area of concern, calculated to a grid interval of 10ft. The actual grid interval was 7ft.

A scaled grid overlay was prepared to superimpose over the scaled site plan. A specified point, the northwest corner of the area of interest, was designated as the 0,0 coordinate.

The grid was adjusted to maximize sampling coverage, given the irregularity of the area's shape. This strategy provided a 95% to 99% confidence level to identify any hot spot concentrations of PCB on the site. Real time personal particulate zone monitors were used during the soil sampling events. Engineering controls implemented, if elevated air quality was detected, required the individuals performing the sampling to temporarily leave the sampling area to allow air borne particulates to subside. Details are provided in the HASP

Soil samples were collected in accordance with ASTM Standard Practice D5633, using soil sampling scoops to collect each individual surface soil sample. The scoop was decontaminated between samples with an alkinox hot water solution and rinsed. Four-ounce glass EPA approved pre-cleaned sample containers were used for the collected soil samples.

All decontamination waters were retained on site until removal and proper disposal of collected washings are undertaken. Upon completion of sample collection, the spent sampling scoops were drummed and retained on site and subsequently removed, transported and properly disposed.

The collected samples were placed into a cooler, and shipped to Quantum Laboratories, under chain of custody, for determination of PCB concentration via SW-846 Method 8082. The laboratory's QA/QC was obtained and considered in the assessment of the laboratory data.

Analytical tracking information consistent with OSWER Directive No. 9240.0-2B is provided in the appendices of this report. EPA was notified at least 3 days prior to sampling and was availed of split samples, however, no split samples were requested.

Although the target criteria for cleanup of soils provided in 40 CFR 761.130 is listed as 25 ppm, a more stringent target criteria of 20 ppm was selected by the Respondent. This criteria is the Michigan Department of Environmental Quality's (MDEQ) generic industrial site standard for PCBs.

Eight samples were collected on 5/24/2000 and the results are presented in Quantum's Lab Report No. 1007; twenty-nine (29) samples were collected on 5/26/2000 and the results from these samples are presented in Quantum's Lab Report No. 1010; thirty samples were collected on 6/1/2000 and the results are presented in Quantum's Lab Report No. 1011; fourteen (14) samples were collected on 6/6/2000 and the results are presented in Quantum's lab Report No. 1013. It is noted that Quantum's detection limits for all seven families of PCBS is 10 ug/Kg or 10 ppb. Recoveries of surrogate standards were reported to be within acceptable limits.

The laboratory noted a few specific instances where the relative percent difference (RPD) was outside acceptance limits for matrix spikes and attributed the RPD failure to sample matrix interference.

Sample locations are provided in **Figure 6**. **Table 11** presents salient data reported by the laboratory on the samples collected and analyzed.

**TABLE 11****PCB's by Method 8082****Salient Features of Soil Verification Sampling Results**

Sample (ug/Kg, dry weight/ ppb)								
Parameter	78	77	75	25	102	101	112	111
Arochlor 1260	9010	4860	146	114	100	43.4	51.5	317
Parameter	65	63	64	65	66	72	73	74
Arochlor 1260	69	108	38	204	564	38	177	136
Parameter	76	82	83	84	86	92	93	94
Arochlor 1260	< D.L.	119	< D.L.	< D.L.	< D.L.	< D.L.	139	143
Parameter	95	96	97	103	104	105	106	107
Arochlor 1260	< D.L.	< D.L.	< D.L.	< D.L.	361	35	518	1310
Parameter	116	117	126	127	136	109	118	119
Arochlor 1260	48	2150	38	731	405	846	436	1280
Parameter	134	135	137	138	143	144	145	146
Arochlor 1260	< 50	< D.L.	3920	85	< 50	< D.L.	< D.L.	511
Parameter	147	153	154	155	158	157	163	164
Arochlor 1260	< D.L.	< D.L.	< D.L.	< 100	279	187	44	< D.L.
Parameter	165	186	173	174	175	176	113	114
Arochlor 1260	76	< D.L.	4490	335	< D.L.	47	88	< D.L.
Parameter	115	128	133					
Arochlor 1260	53	1160	90					

The above data represents the only samples in which PCBs were detected, and specifically arochlor 1260.

As may be seen in the above table, no reported value exceed the criteria of 20 ppb, 20 ppm, which is the Michigan Department of Environmental Quality's (MDEQ) generic industrial site standard for PCBs. Therefore, no further remediation is required at this time on Area #1 which verifies successful completion of cleanup procedures for Area #1.

## B DWSD Sewer System

Subsequent to cleaning the sewer system as described above, ENMANCO visually inspected the sewer lines and collected samples from each catch basin and sump and submitted the collected samples, under chain of custody, to Quantum Laboratories for analysis of PCBs. The provision of analytical tracking information consistent with OSWER Directive No. 9240.0-2B was prepared and appears in **Appendix 10**.

Sampling was performed in accordance with DWSD's request. Enmanco collected a water sample from each catch basin and sump associated with the site. DWSD collected a single sample from MH#2. ENMANCO's samples were delivered under chain of custody to Quantum Laboratories for analysis of PCBs. The complete report may be found in Appendix 11 and identified as Report 1068. A summary of the results is presented in **Table 12**

**Table 12: Sewer Cleaning Verification Results**

Sample Number:	CB1	CB2	MH2	MH3	Detection	Units of
Sample ID:	Verification Samples for DWSD's Cleaning				Limit	Measure
<b>Parameter</b>						
Arochlor 1016	< D.L.	< D.L.	< D.L.	< D.L.	0.2	mg/L
Arochlor 1221	< D.L.	< D.L.	< D.L.	< D.L.	0.2	mg/L
Arochlor 1232	< D.L.	< D.L.	< D.L.	< D.L.	0.2	mg/L
Arochlor 1242	< D.L.	< D.L.	< D.L.	< D.L.	0.2	mg/L
Arochlor 1248	< D.L.	< D.L.	< D.L.	< D.L.	0.2	mg/L
Arochlor 1254	< D.L.	< D.L.	< D.L.	< D.L.	0.2	mg/L
Arochlor 1260	< D.L.	< D.L.	< D.L.	< D.L.	0.2	mg/L

Prior to cleaning the DWSD's sewer system, the DWSD system had been sampled in May of 2000 by ENMANCO and catch basin #1 was the only appurtenance that demonstrated a high level of PCBs presence. This is actually of no surprise in as much as the PCB. Apparently drained directly into the catch basin. The fact that no concentration of PCB, above the detection limit, was found verifies the successful cleaning of the DWSD's sewer system. ENMANCO provided split samples with DWSD and no PCBs were detected in any samples.

## C Other Areas

Upon completion of scarification of floor areas with facility where PCBs were detected (see Figure 4 and Table 5), wipe samples were collected and submitted for analysis to Quantum Laboratories. *Report 1079, which may be found in Appendix 11*, presents the laboratory data. As may be seen in the laboratory report, no PCBs were detected in any of the collected samples. This data confirms the completion of clean up for areas under drums and pails, as well as areas of questionable staining.

The pits in the hammer room that were filled in with debris by the Respondent at the time of the closing of the facility in 1996, were determined to be innocuous. The floor sample taken from the bottom of the excavation revealed no PCB presence. (See *Report 1070 in Appendix 11*). Therefore, it may be concluded that none of the debris filled hammer pits are contaminated with PCBs.

The removal of the concrete sidewalk on the south side of the facility, along with the replacement of the concrete confirms the completion of clean up of that area.

Given the cold temperatures existing at the time of year that this project was completed, it was decided that the Respondent would be better served if the truckwell area were filled in with sand and gravel capped as opposed to concrete capped. Filing in of the truckwell minimizes the potential of water recharge in this area.

Although the liquid in the pits located in the hammer room and the shear room did not contain PCBs or hazardous materials, the pits were vacuumed and back filled with sand and graded to minimize potential water recharge.

The removal and proper disposal of the medical waste (**Appendix 18**) by Stericycle (formerly BFI Medical Waste Disposal), confirms the completion of clean up of the medical waste.

Pail #35 was profiled, disposed and manifested as hazardous which and the manifest, found in **Appendix 19**. The solvent scan of Drum #3 indicated no PCBs and therefore Drum #3 was disposed under manifest as non-hazardous waste.

## 10.0 DECONTAMINATION OF EQUIPMENT AND REMOVAL FROM SITE

The two 20,000 gallon frac tanks were decontaminated and the wash water was treated thru the GAC water treatment system. The frac tanks were removed from the site.

The 6000 gallon vac tanker, originally used to store contaminated water was decontaminated and the wash water was treated through the GAC treatment system. The 2500 gallon holding tank was decontaminated and the wash water was treated through the GAC water treatment system.

The standby generator was removed from the site on 12/26/2000.

Barricade and caution tape was removed and bagged for general refuse disposal and West Jefferson Street was opened to the public.

PPE waste, contaminated tools, piping, GAC filter system drums, bag filters, plastic tarping, shovels, sampling spatulas, ColiWassa tubes and other expendable paraphernalia used on site was placed into a roll off with the sidewalk concrete and transported to EQ landfill for disposal in a PCB cell on 1/2/2001. On 1/4/2001, ENMANCO's decon and utility trailer, located in the safe zone, were removed from the site.



## 11.0 DISCUSSION AND CONCLUSIONS

A good faith estimate of total costs incurred by Letts Industries in complying with the Consent Order is \$700,000.00. A spreadsheet detailing these costs is presented in **Appendix 20**. It is noted that until notice of project completion is received from the U.S. EPA, some of these costs will continue.

A listing of quantities and types of materials removed off-site or handled on-site is provided in **Appendices 4, 7, 18 & 19**. A listing of the ultimate destinations of those materials may be found in **Appendix 21**.

The former steel yard and truckwell areas where the spill impacted, were backfilled with sand, capped with No 57 stone and graded. Pits, formerly filled with liquid (primarily water) were backfilled with sand. All drums, pails, tanks, and other containers were removed from the facility and properly disposed.

## **TABLES**

- 1 Areas of Containers and Staining Resulting and Not Resulting from Spill**
- 2 Analytical Results of Samples Collected During Initial Response Actions**
- 3 Analytical Results of DWSD Sewer Samples Prior to Cleaning**
- 4 Drum/Container Inventory Schedule**
- 5 Sampling Log for Drums, Pails, Pits, Tanks, and Floor Scrapings**
- 6 Salient Analytical Results on Containers and Floor Samples**
- 7 Salient Analytical Results on Sidewalk Wipe Samples Prior to Removal of Sidewalk Concrete**
- 8 Pits**
- 9 Analytical Results of Blank, Control Spike, and Treated Control**
- 10 Monitoring of Treated Water**
- 11 Salient Analytical Results of Soil Verification Sampling in Steel Yard**
- 12 Verification Sampling for Sewer Cleaning**

**TABLE 1: Depicts areas of containers and staining resulting and not resulting from spill**

<b>ARE A</b>	<b>DESCRIPTION</b>
<b>1</b>	Steel yard, truck loading dock, main electrical pad containing 2 transformers and 4 carcasses, 3 capacitors and a circuit breaker. Exclusion Zone (EZ).
<b>2</b>	Storm sewer system including both catch basins along West Jefferson Avenue and manholes along alley way. Exclusion Zone (EZ).
<b>3</b>	Hammer Shop, 2 pits, surface stained area, and 3 drums
<b>4</b>	Northwest storage yard area and location of 2 ASTs, 13 drums and stained surface areas.
<b>5</b>	Pit located in shear room.
<b>6</b>	2 Drums and floor stains in air compressor room.
<b>7</b>	3 Drums along east wall of hammer shop.
<b>8</b>	Unlabeled drum and medical waste along north wall of hammer shop.
<b>9</b>	2 Drums in shear shop.
<b>10</b>	Four (4) drums on south side of maintenance crib.
<b>11</b>	Eight (8) 5-gallon pails in tool crib and one (1) 55-gallon drum in die room with stained surfaces.
<b>12</b>	Four (4) 55-gallon drums, one (1) pail, and stained surface.

**TABLE 2**

Sample ID	1	2	3	4	5	6
Dated Collected	3/31/2000	3/31/2000	04/04/2000	04/04/2000	04/04/2000	04/04/2000
Date Extracted	3/31/2000	3/31/2000	04/04/2000	04/04/2000		04/04/2000
Date Analyzed	4/3/2000	4/3/2000	04/05/2000	04/05/2000	04/04/2000	04/05/2000
Media	water	soil/debris	debris/sludge	floor scrapings	pit oil	water
Method	EPA 608	SW846-8082	SW846-8082	SW846-8082	SW846-8082	EPA 608
Constituents	ppb	ppb	ppb	ppb	ppm	ppb
ARO 1016	ND	ND	ND	ND	ND	ND
ARO 1221	ND	ND	ND	ND	ND	ND
ARO 1232	ND	ND	ND	ND	ND	ND
ARO 1242	ND	ND	ND	ND	ND	ND
ARO 1248	ND	ND	ND	ND	ND	ND
ARO 1254	ND	ND	ND	ND	ND	ND
ARO 1260	13	23000	16000	ND	ND	ND

{Method detection limits for the above analysis varied and the laboratory stated that DLs were elevated due to dilution. The DL for water sample 1 was reported as 1.0 ppb except for ARO 1232, which is 2.0; the DL for sample 2 was reported as 3300 ppb; DL for sample 3 and 4 = 660; DL for sample 5 = 1.98 ppm; and the DL for sample 6 = 10ppb, except for ARO 1232, which is 20pp.}

TABLE 3

Parameter	Sample (ug/L)					Detection Limit
	MH1	MH2	MH3	CB1	CB2	
Arochlor 1016	< D.L.	<1.0	< D.L.	< D.L.	< D.L.	0.2
Arochlor 1221	< D.L.	<1.0	< D.L.	< D.L.	< D.L.	0.2
Arochlor 1232	< D.L.	<1.0	< D.L.	< D.L.	< D.L.	0.2
Arochlor 1242	< D.L.	<1.0	< D.L.	< D.L.	< D.L.	0.2
Arochlor 1248	< D.L.	<1.0	< D.L.	< D.L.	< D.L.	0.2
Arochlor 1254	< D.L.	<1.0	< D.L.	< D.L.	< D.L.	0.2
Arochlor 1260	< D.L.	<1.0	< D.L.	<b>1000</b>	< D.L.	0.2
						Acceptance
Surrogate Standards	Percent Recovery					Limits
TMX	84.5%	79.5%	82.0%	111%	61.5%	40-125%
DCB	88.0%	87.0%	88.0%	115%	74.0%	50-120%

**TABLE 4** Inventory of Drums Pails and Tanks

<b>DRUM</b>	<b>ORIGINAL LOCATION AREA</b>	<b>STAGING AREA</b>	<b>COMMENTS</b>
1	Area #4 Near flash scrap truck dock	West Staging Area	Empty
2	Area #4 Near flash scrap truck dock	West Staging Area	Sample #50
3	Area #4 Near flash scrap truck dock	West Staging Area	Sample #49
4	Area #4 Near flash scrap truck dock	West Staging Area	Sample #48
5	Area #4 Near flash scrap truck dock	West Staging Area	Sample #47
6	Area #4 Near flash scrap truck dock	West Staging Area	Sample #46
7	Area #4 Near flash scrap truck dock	West Staging Area	Sample #37
8	Area #4 Near flash scrap truck dock	West Staging Area	Sample #36
9	Area #4 Near flash scrap truck dock	West Staging Area	Sample #38
10	Area #4 Near flash scrap truck dock	West Staging Area	Empty
11	Area #4 Near flash scrap truck dock	West Staging Area	Empty
12	Area #4 Near flash scrap truck dock	West Staging Area	Sample #14
13	Area #4 Near flash scrap truck dock		Sample 76
14	In cold punch & trim area	West Staging Area	Sample #17
15	Area #6 air compressor area	West Staging Area	Sample #18
16	Area #6 air compressor area	West Staging Area	Sample #19
17	Area #7 Hammer Shop	West Staging Area	Empty
18	Area #7 Hammer Shop	West Staging Area	Sample #20
19	Area #3 Hammer Shop; small little drum cut down	West Staging Area	Sample #21
20	Area #7 Hammer Shop	West Staging Area	Empty
21	Area #3 Hammer Shop; Overfull drum near pit	West Staging Area Overpacked because drum was full	Sample 23
22		West Staging Area	Empty
23	Area #8 Near medical waste	West Staging Area	Empty
24	Area #12 near shipping office	West Staging Area	Sample #16
25	Area #12 near shipping office	West Staging Area	Empty
26	Area #12 near shipping office	West Staging Area	Empty
Pail 27	Area #12 near shipping office	West Staging Area	Sample 77
28	Area #12 near truck loading dock off of hot zone	West Staging Area	Sample #15
29	Area #11: Tool crib area near die room	East Staging Area	Sample #29
Pail 30	Area #11: Tool crib area near die room	East Staging Area	Unable to sample; Label indicated nontoxic, non- corrosive, water soluble. Could not open
Pail 31	Area #11: Tool crib area near die room	East Staging Area	Sample #33
Pail 32	Area #11: Tool crib area near die room	East Staging Area	Sample #34

Pail 33	Area #11: Tool crib area near die room	East Staging Area	Sample #39
Pail 34	Area #11: Tool crib area near die room	East Staging Area	Sample #22
Pail 35	Area #11: Tool crib area near die room	East Staging Area	Sample #32
Pail 36	Area #11: Tool crib area near die room	East Staging Area	Sample #31
Pail 37	Area #11: Tool crib area near die room	East Staging Area	Sample #30
38	Area #10: Near maintenance Crib	East Staging Area	Sample #28
39	Area #10: Near maintenance Crib	East Staging Area	Sample #26
40	Area #10: Near maintenance Crib	East Staging Area	Sample #27
41	Area #10: Near maintenance Crib	East Staging Area	Sample #25
42	Area #9: Near Shear room	East Staging Area	Empty
43	Area #9: Near Shear room	East Staging Area	Empty (small drum)
AST #1		West Staging Area	Sample 74
AST#2		West Staging Area	Empty
Med Waste	Area #8 Medical Waste placed into sharps container for Stericycle Disposal	West Staging Area	Eight 1-cc. Syringes Not Sampled

TABLE 5

SAMPLE	DESCRIPTION
1	Ground scrapings from Area #4 under 55-gallon drums numbered 1 - 13
2	Ground scrapings under AST#1 (inside shed)
3	Ground scrapings under AST #2 (outside shed) Sl. Oily odor (diesel fuel)
4	Ground scrapings in Area of Drum #14 in Cold Punch and Trim area. Ground noted as dark discoloration. Drum was marked "TRASH". Scrapings observed to be fine sediment.
5	Ground scrapings in Area of Drums #15 and #16 from compressor room. Visibly oily type substance. Slight odor.
6	Stained area in air compressor room. Fine gravel saturated with oily substance. Strong odor with sticky/gluey texture.
7	Floor scrapings in area of Drum #17 in Hammer Shop near electrical panels. Fine silt material. Appeared to be charred soil
8	Floor scrapings from Area of Drum #18 and #19 (half or less of a drum) in Hammer Shop under stairs. Floor scrapings very sticky substance. Has odor of tar.
9	Floor scrapings from area of Drum #20 [almost empty] Appear to be heavy fines; maybe iron oxide
10	Floor scrapings from area of Drum #21 [drum full has to be overpacked]. Scrapings appeared sticky and oil saturated. Odor of used motor oil.
11	Floor scrapings from area of Drum #22. Sticky, saturated, coarse gravel and silt; Odor.
12	Floor scrapings from area of Drum #23. Oily, oxidized substance. No odor.
13	Floor scrapings of area of Pails # 24 - #27. Oily substance. <i>The following drums are staged on the west side of the property in the vicinity of the Flash Scrap Truck Dock.</i>
14	Drum 12
15	Drum 28; very thick black oily substance
16	Drum 24; Light black oily substance
17	Drum 14; Oily water
18	Drum 15; Red fluid (transmission fluid)
19	Drum 16; Red fluid (transmission fluid)
20	Drum 18
21	Drum 19; Overpacked
23	Drum 21 Sampled on 10/25/2000
24	Pit in Hammer Room; sample collected from sludge material from bottom of pit
36	Drum 8
37	Drum 7
38	Drum 9
46	Drum 6
47	Drum 5
48	Drum 4
49	Drum 3
50	Drum 2 <i>The following samples were collected from drums, and pails or taken from areas on the east side of the facility in or near the Die Room</i>
25	Drum 41; Expert Oil Co - Lubricating oil; thick heavy oil



- 26 Drum 39; thin oil
- 27 Drum 40 ("Waterless Handsoap" written on drum
- 28 Drum 38
- 29 Drum 29 "ZipOCreme- Waterless Handcream for Dirty Hands" written on label ;  
Appeared to be thick emulsion
- 30 Pail 37
- 31 Pail 36; Composite of several hammer pit samples previously collected in individual  
containers and placed into the pail. All appeared to be the same oil
- 22 Pail 34; Light oil
- 32 Pail 35; (Sealed virgin material with green color; oily
- 33 Pail 31; Composite of several hammer pit samples similar to above but in a different pail
- 34 Pail 32; Bond setting mortar
- 35 Pit in Shear Room
- 39 Pail 33; "Troulize- a bonding mortar by National Refractories & Minerals Co." on label
- 40 Floor scrapings in area of Drum 29..[where the turtle was]
- 41 Floor scrapings from area of Drum 30
- 42/51 Wipe sample from shear room under area of Drums #31 - #37
- 43 Floor scrapings under Drum 43
- 44 Floor scrapings in area under Drum 38
- 45 Floor scrapings of area under Drum 42

Samples #52 thru #73 were wipe samples taken on the public sidewalk on West Jefferson in front of the steel yard.

**TABLE 6 Salient Analytical Results on Containers and Floor Samples**

Sample ID	Sample Description	Parameter	Result	Regulatory Limit	Units of Measure
7	Floor Scrapings Under Drum 17	TOX	1100	1000	mg/Kg
8	Floor Scrapings Under Drum 18 and 19	TOX	2300	1000	mg/Kg
11	Floor Scrapings Under Drum 18 and 19	TOX	1800	1000	mg/Kg
28	Drum 38	TOX	3400	1000	mg/Kg
32	Pail 35	TCLP Barium	499	100	mg/L
41	Floor Scrapings Under Drum 30	TOX	1400	1000	mg/Kg
44	Floor Scrapings Under Drum 38	TCLP Lead	13.1	1.0	mg/L
49	Drum 3	TOX	1500	1000	mg/Kg

**TABLE 7**, sidewalk wipe samples did exceed 10ug/100cm<sup>2</sup> for four samples, (namely 61, 62, 63 and 64)

**Polychlorinated Biphenyls (PCB) Wipes West Jefferson Avenue Sidewalk**

<i>Sample Number:</i>	<u>53</u>	<u>54</u>	<u>55</u>	<u>56</u>	<u>57</u>	<u>58</u>	Detecti on Limit	Units
Arochlor 1260	0.19	0.10	0.14	0.17	0.13	1.8	0.1	ug/100cm <sup>2</sup>
<i>Sample Number:</i>	<u>59</u>	<u>60</u>	<u>61</u>	<u>62</u>	<u>63</u>	<u>64</u>		
Arochlor 1260	0.72	6.4	<b>39</b>	<b>16</b>	<b>54</b>	<b>17</b>	0.1	ug/100cm <sup>2</sup>
<i>Sample Number:</i>	<u>65</u>	<u>66</u>	<u>67</u>	<u>68</u>	<u>69</u>	<u>70</u>		
Arochlor 1260	6.0	7.2	1.0	0.41	0.84	3.9	0.1	ug/100cm <sup>2</sup>
<i>Sample Number:</i>	<u>71</u>	<u>72</u>	<u>73</u>					
Arochlor 1260	0.13	0.48	< D.L.				0.1	ug/100cm <sup>2</sup>

**TABLE 8**

**Carbon Capacity:** 200 lbs of virgin grade GAC per 55-gallon drum, with a 20% allowance for fluidizing the filtration media during back flushing.

**Nominal Flow Rate:** 5GPM

**Empty Bed Contact Time:** 1 Drum: 11.0 Minutes

**Calculation:** 1 Drum: 55 gallons/ 5 GPM = 11 Minutes

**EPA Guideline for minimum contact time** = 7.5 minutes

**Hydraulic Loading:** 1.592 gal/ft<sup>2</sup>

**Calculations:** Bed Diameter: 24 inches

Bed Area: 452 sq. in (3.14ft<sup>2</sup>)

**Hydraulic Loading** = Flow Rate/Bed Area = 5 GPM/3.14 sq ft = 1.592 gal/sq.ft.

**Volume:** One Vessel: 55-gallon drum = 7.29 ft<sup>3</sup>

**Description of Vessel:** Flow direction = downflow

Top influent connection = male camlock

Top pressure gauge

Top air eliminator

200 lbs virgin grade liquid phase carbon

Bottom distributor: 4 12" lg slotted fingers, 0.015 slots

Material: Steel drum

Diameter: 24-inches

Weight: 45 lbs

Height: 36 inches

Volume: 55 gallons or 7.29 cubic feet

**Operating temperature:** 50 to 120 degrees F

**Operating Pressure:** 5 -7 PSI

**Method:** Vacuum In, Vacuum Out.

**Average time per vessel:** 20 minutes

**Table 9: Analytical Results of Blank, Control Spike and Treated Control**

**9A**

<b>SCAN RESULTS</b> (units are ppb for PCBs)	<b>PCBs</b> <b>Arochlor</b> <b>1260</b>	<b>PCBs</b> <b>Total</b> <b>Arochlors</b>	<b>Bis</b> <b>Phthalate</b> <b>Units are</b> <b>ppm</b>
Water Blank, 12/07/2000, 1600 hours	<0.5	<1.0	<5
Control Spike, 12/08/2000, 930 hours	23.5	48.9	409
Treated Control, 12/08/1000 hours	<0.5	<1	<5

**9B**

<b>PCB Method 608 Units are</b> <b>ppb for PCBs</b> <b>Bis(2-ethylhexyl)phthalate</b> <b>Method 608</b>	<b>PCB</b> <b>Arochlor</b> <b>1254</b>	<b>PCB</b> <b>Arochlor</b> <b>1260</b>	<b>Total</b> <b>Arochlors</b>	<b>Bis</b> <b>Phthalate</b> <b>(ppm)</b>
Water Blank, 12/07/2bis 2000, 1600 hours	<0.5	<0.5	<1.0	<0.2
Control Spike, 12/08/2000, 930 hours	30.8	32.0	62.8	1.43
Treated Control, 12/08/1000 hours	<0.5	<0.5	<1.0	<0.2

TABLE 10A

Sample No.	Sample ID	PCB Results (ug/L)		
		Arochlor 1254	Arochlor 1260	Total Arochlors
1	Water Blank, 12/07/00, 16:00	< 0.5	< 0.5	< 1.0
2	Control Spike, 12/08/00, 09:30	30.8	32.0	62.8
3	Treated Control, 12/08/00, 10:00	< 0.5	< 0.5	< 1.0
4	BH-32T (3000 gal), 12/09/00, 11:11	< 0.5	< 0.5	< 1.0
5	FH-32T, 12/10/00, 14:25	< 0.5	< 0.5	< 1.0
6	BH-32T, 12/11/00, 18:00	< 0.5	< 0.5	< 1.0
7	FH-32T @ 1120 gal Full, 12/12/00, 11:27	< 0.5	< 0.5	< 1.0
8	FH32T @ 3000 gal Full, 12/13/00, 16:00	< 0.5	< 0.5	< 1.0
9	BH32T @ 3000 gal Full, 12/13/00, 17:00	< 0.5	< 0.5	< 1.0
10	21T, 12/14/00, 17:35	< 0.5	< 0.5	< 1.0
11	FH32T @ 3000 gal Full, 12/15/00, 16:00	< 0.5	< 0.5	< 1.0
12	BH32T @ 3000 gal Full, 12/15/00, 16:15	< 0.5	< 0.5	< 1.0
13	BH32T Resample of 12/15/00, 12/16/00	< 0.5	< 0.5	< 1.0
14	21T, 12/16/00	< 0.5	< 0.5	< 1.0
15	FH32T @ 2400 gal, 12/17/00, 16:00	< 0.5	< 0.5	< 1.0
16	Truck Well Ponding Area, 12/18/00, 15:00	< 0.5	< 0.5	< 1.0
17	BH-32T, 12/18/00, 15:00	< 0.5	< 0.5	< 1.0
18	21T, 12/19/00, 17:00	< 0.5	< 0.5	< 1.0

**TABLE 10B**

Sample No.	Sample ID	bis(2-Ethylhexyl) phthalate (mg/L)
1	Water Blank, 12/07/00, 16:00	<0.20
2	Control Spike, 12/08/00, 09:30	1.43
3	Treated Control, 12/08/00, 10:00	<0.20
4	BH-32T (3000 gal), 12/09/00, 11:11	<0.20
5	FH-32T, 12/10/00, 14:25	<0.20
6	BH-32T, 12/11/00, 18:00	<0.20
7	FH-32T @ 1120 gal Full, 12/12/00, 11:27	<0.20
8	FH32T @ 3000 gal Full, 12/13/00, 16:00	<0.20
9	BH32T @ 3000 gal Full, 12/13/00, 17:00	<0.20
10	21T, 12/14/00, 17:35	<0.20
11	FH32T @ 3000 gal Full, 12/15/00, 16:00	<0.20
12	BH32T @ 3000 gal Full, 12/15/00, 16:15	<0.20
13	BH32T Resample of 12/15/00, 12/16/00	<0.20
14	21T, 12/16/00	<0.20
15	FH32T @ 2400 gal, 12/17/00, 16:00	<0.20
16	Truck Well Ponding Area, 12/18/00, 15:00	<0.20
17	BH-32T, 12/18/00, 15:00	<0.20
18	21T, 12/19/00, 17:00	<0.20

TABLE 11

PCB's by Method 8082

Salient Features of Soil Verification Sampling Results

Sample (ug/Kg, dry weight/ ppb)								
Parameter	78	77	75	25	102	101	112	111
Arochlor 1260	9010	4860	146	114	100	43.4	51.5	317
Parameter	65	63	64	65	66	72	73	74
Arochlor 1260	69	108	38	204	564	38	177	136
Parameter	76	82	83	84	86	92	93	94
Arochlor 1260	< D.L.	119	< D.L.	< D.L.	< D.L.	< D.L.	139	143
Parameter	95	96	97	103	104	105	106	107
Arochlor 1260	< D.L.	< D.L.	< D.L.	< D.L.	361	35	518	1310
Parameter	116	117	126	127	136	109	118	119
Arochlor 1260	48	2150	38	731	405	846	436	1280
Parameter	134	135	137	138	143	144	145	146
Arochlor 1260	< 50	< D.L.	3920	85	< 50	< D.L.	< D.L.	511
Parameter	147	153	154	155	158	157	163	164
Arochlor 1260	< D.L.	< D.L.	< D.L.	< 100	279	187	44	< D.L.
Parameter	165	186	173	174	175	176	113	114
Arochlor 1260	76	< D.L.	4490	335	< D.L.	47	88	< D.L.
Parameter	115	128	133					
Arochlor 1260	53	1160	90					



**Table 12: Sewer Cleaning Verification Results**

<b>Sample Number:</b>	<b>CB1</b>	<b>CB2</b>	<b>MH2</b>	<b>MH3</b>	<b>Detection</b>	<b>Units of</b>
<b>Sample ID:</b>	<b>Verification Samples for DWSD's Cleaning</b>				<b>Limit</b>	<b>Measure</b>
<b>Parameter</b>						
Arochlor 1016	< D.L.	< D.L.	< D.L.	< D.L.	0.2	mg/L
Arochlor 1221	< D.L.	< D.L.	< D.L.	< D.L.	0.2	mg/L
Arochlor 1232	< D.L.	< D.L.	< D.L.	< D.L.	0.2	mg/L
Arochlor 1242	< D.L.	< D.L.	< D.L.	< D.L.	0.2	mg/L
Arochlor 1248	< D.L.	< D.L.	< D.L.	< D.L.	0.2	mg/L
Arochlor 1254	< D.L.	< D.L.	< D.L.	< D.L.	0.2	mg/L
Arochlor 1260	< D.L.	< D.L.	< D.L.	< D.L.	0.2	mg/L

## **FIGURES**

**Figure 1: General Vicinity Map**

**Figure 2: Site Plan**

**Figure 3: DWSD Sewer System Surrounding Property**

**Figure 4: Location of Drums, Pits, Pails, and ASTs**

**Figure 5: Scaled Site Map of Sidewalk of West Jefferson Avenue Location of Samples**

**Figure 6: Soil Sample Locations For Cleanup Verification of Steel Yard Area**

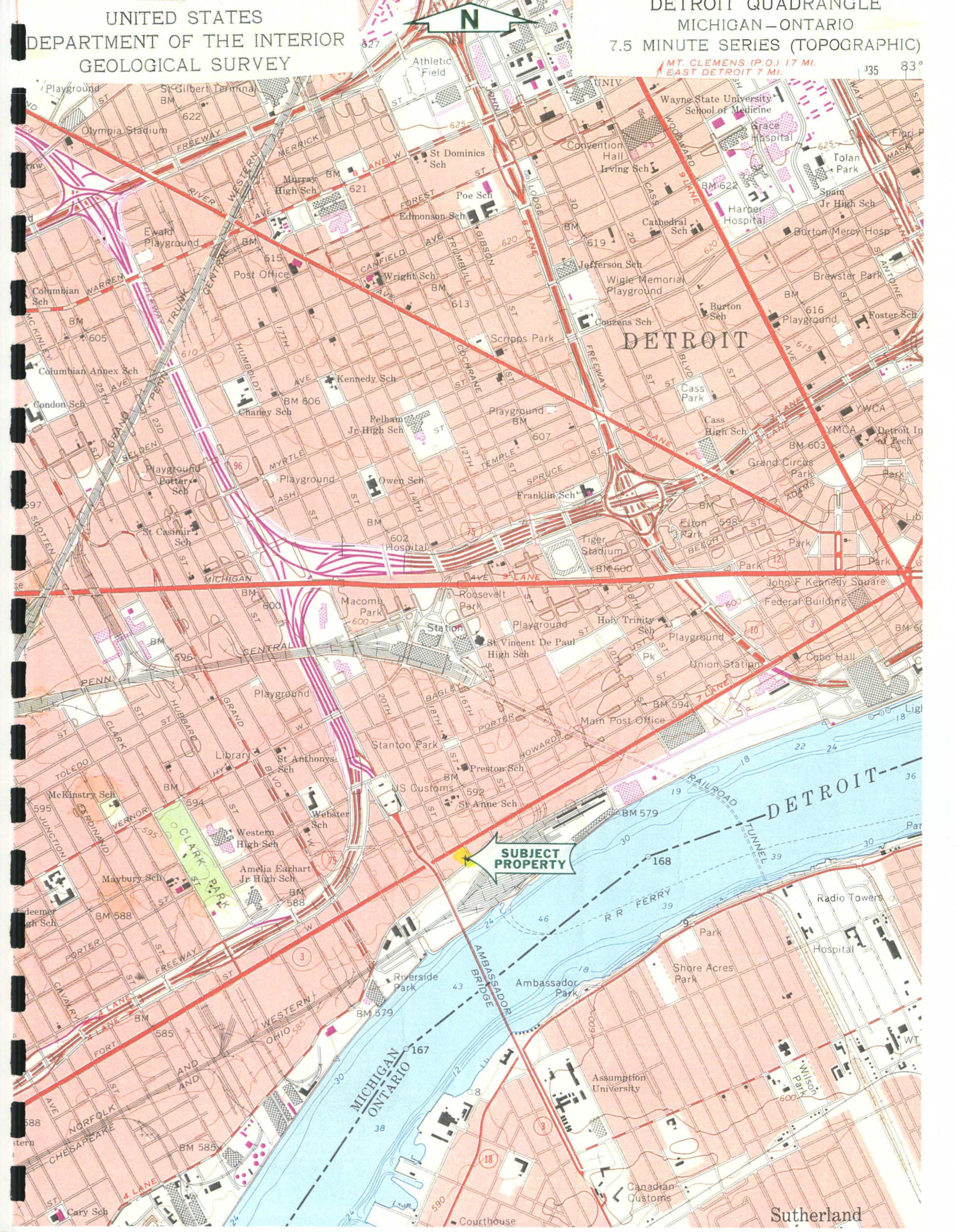


UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

DETROIT QUADRANGLE  
MICHIGAN-ONTARIO  
7.5 MINUTE SERIES (TOPOGRAPHIC)

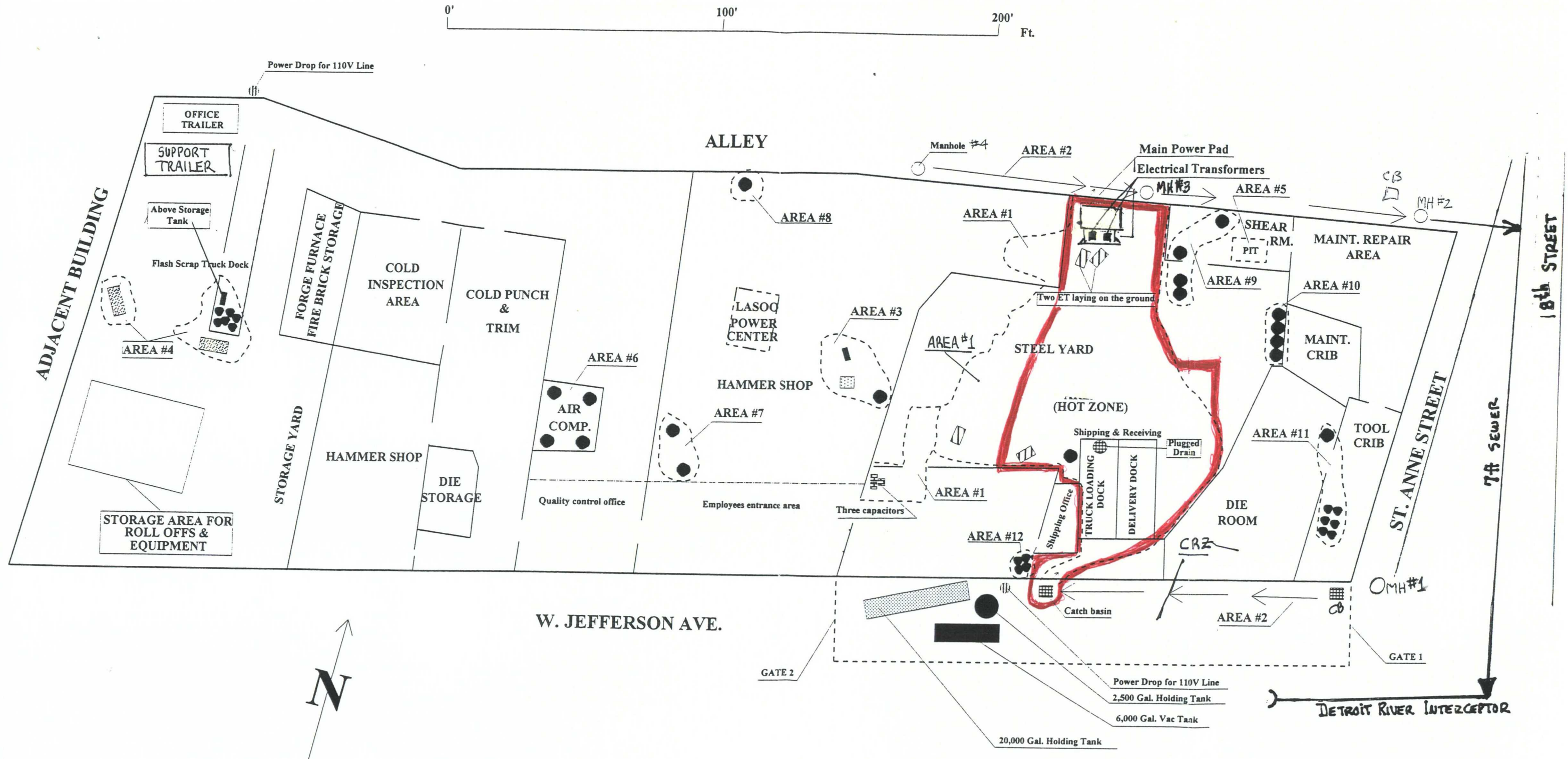
MT. CLEMENS (P.O.) 17 MI.  
EAST DETROIT 7 MI.

35° 83°





# LETTS DROP FORGE - FACILITY LAYOUT



ENMANCO, INC.

Drawn by Alex Ionescu  
April 9, 2000  
MODIFIED 4-20-2000 (LS)

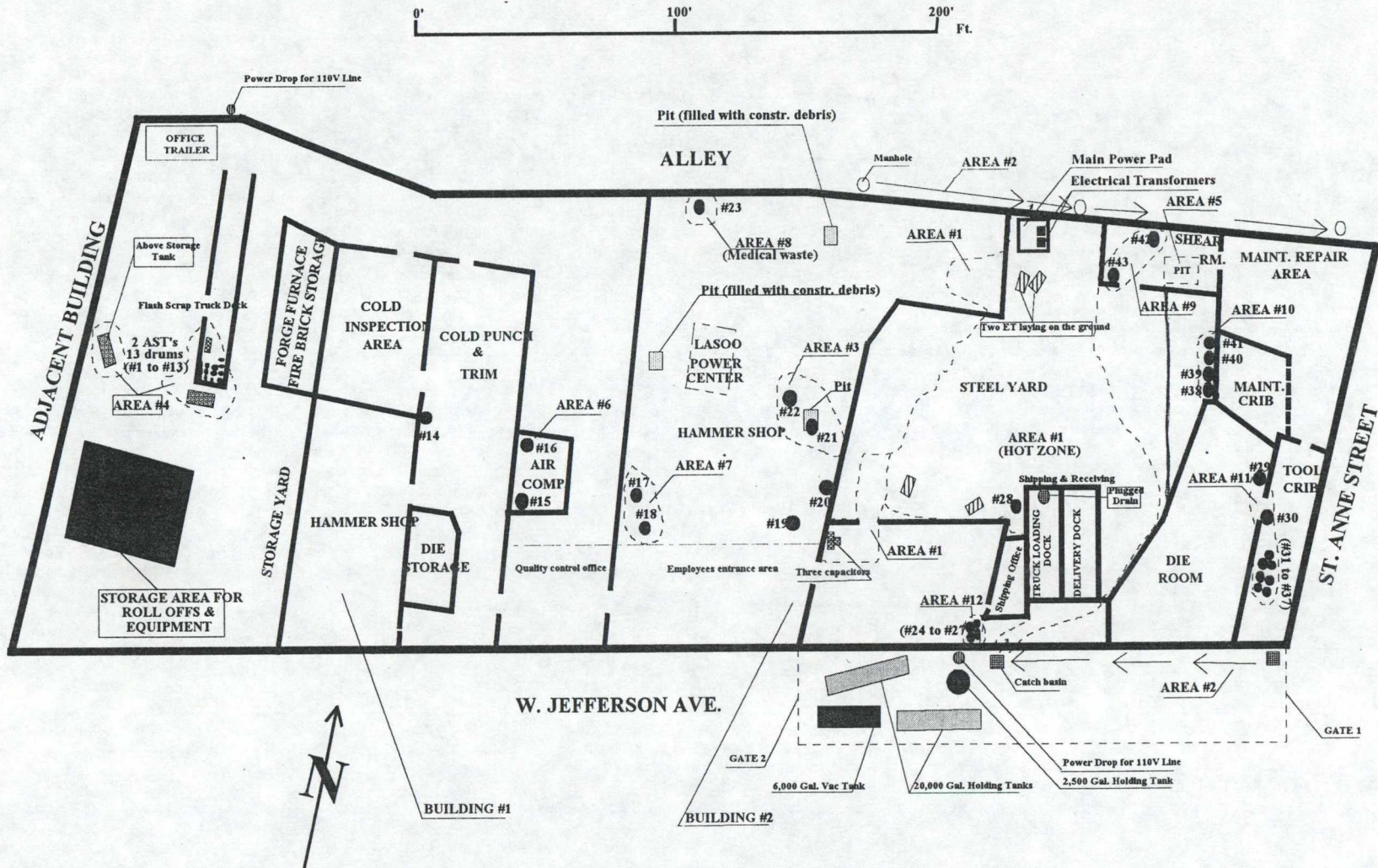
Figure 2



The map shows a rectangular area bounded by FORT ST. to the north, 21ST ST. to the west, 18TH ST. to the east, and W. JEFFERSON to the south. A large rectangle in the center is labeled 'LETTS DROP FORGE'. To the west of the forge is a dashed line with a circle labeled 'DETROIT RIVER INTERCEPTOR' and '15'-6" CYL'. To the east of the forge is a dashed line with a circle labeled '7'-0" cyl'. Four manholes are marked: MH #1 at the bottom right, MH #2 at the top right, MH #3 at the top left, and MH #4 at the top left. Two catch basins are marked: CB #1 at the bottom left and CB #2 at the bottom right. A north arrow is in the top left corner. A scale bar is at the bottom left.



# LETTS DROP FORGE - FACILITY LAYOUT



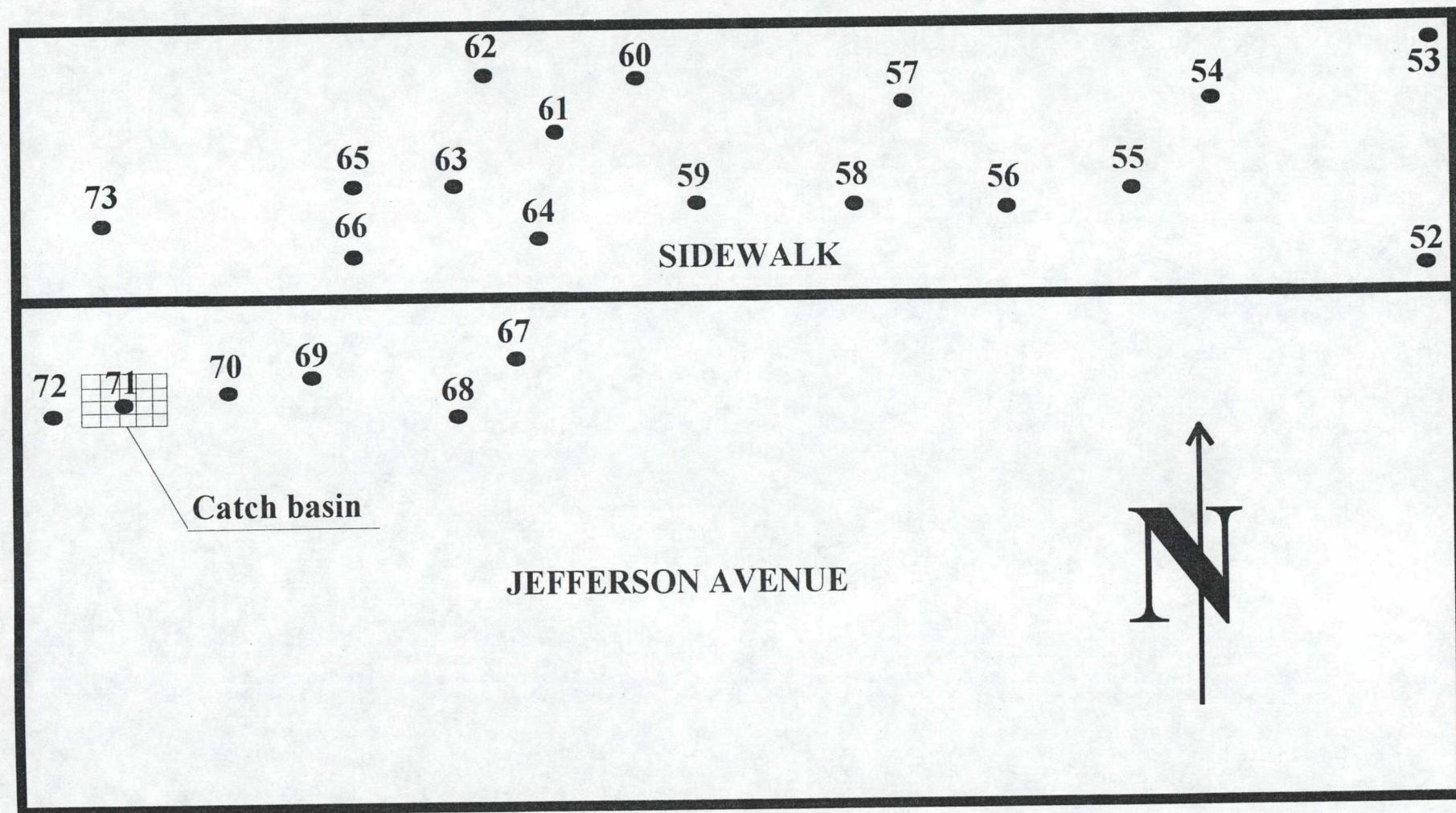
ENMANCO, INC.

Drawn by Alex Iones  
Nov. 8, 2000

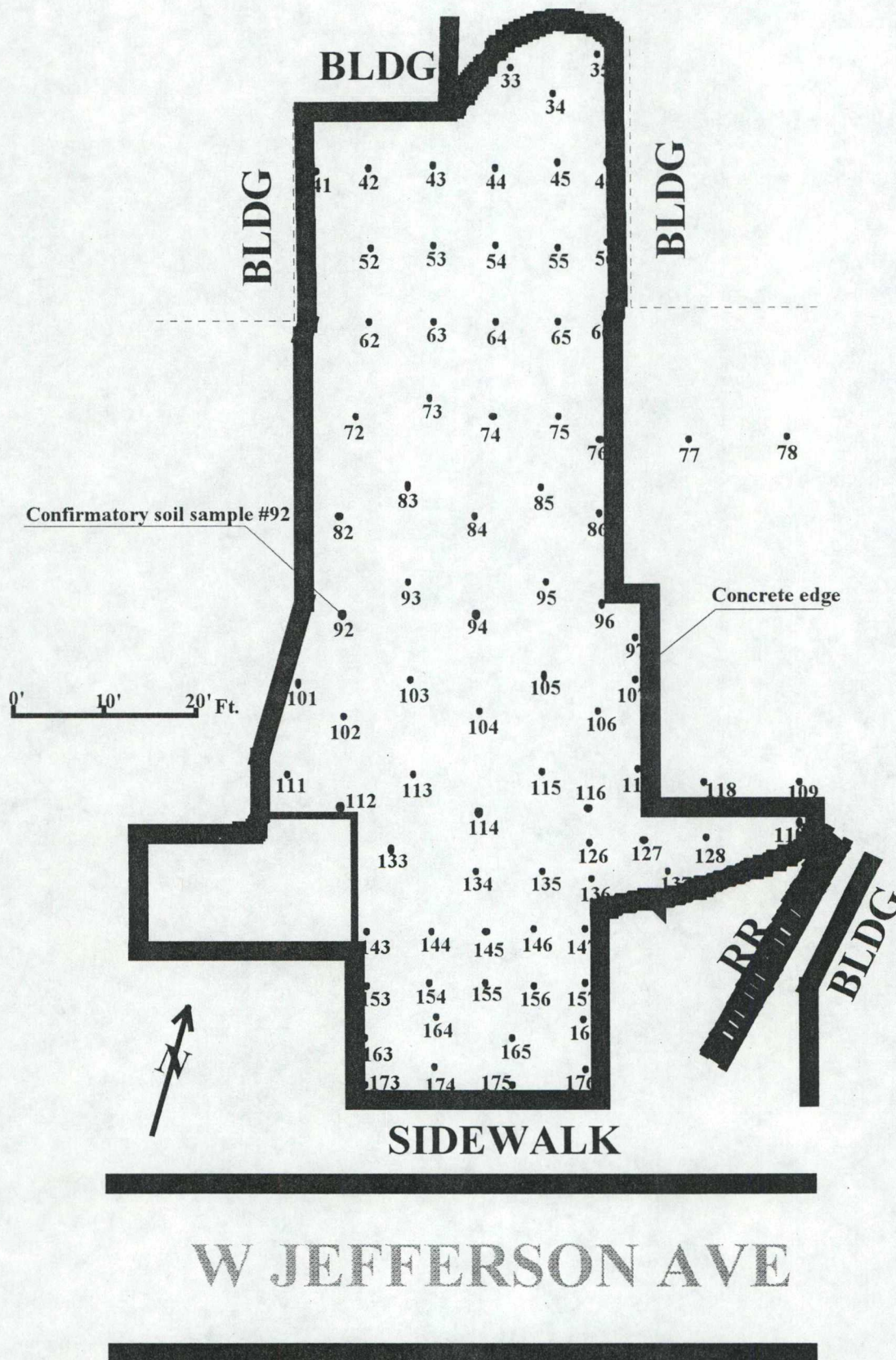


# PCB's WIPE SAMPLE LOCATIONS

0' 10' 20' Ft.







Figure